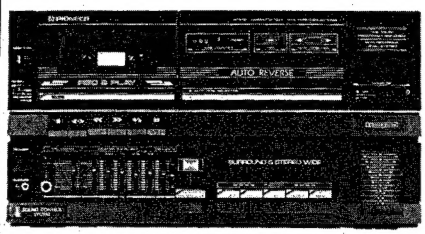
PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP1120-0

STEREO CASSETTE TAPE DECK AMPLIFIER

DC-X33Z(BK)
DC-X33Z

MODEL DC-X33Z(BK) COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Destination
	DC-X33Z(BK)	DC-X33Z		
HE	O	O	AC 220V (240V)* (Switchable)	European continent
HB	O	O	AC 240V (220V)* (Switchable)	United Kingdom
S	O	—	AC 110V/120V/240V (Switchable)	General market
YP	O	—	AC 240V only	Australia
HEZ	O	—	AC 220V (240V)* (Switchable)	West Gemany

* Change the primary wiring of the power transformer.

- **This service manual is applicable to the HB, HE and S types.**
- **As to the HE and S types, please refer to page 55, 56.**
- **As to the other types, please refer to the additional service manual.**
- **As to the circuit and mechanism descriptions, please refer to the DC-X55Z(BK) service manual (ARP-1054).**

CONTENTS

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PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1,2740 Beveren. Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: (03) 580-9911

1. SPECIFICATIONS

AMPLIFIER SECTION

Continous Average Power Output is 25 Watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz, with no more than 0.3% total harmonic distortion.

**Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.*

Continuous Power Output
- 40 to 20,000Hz ..... 25 W + 25 W (T.H.D. 0.3% 8 ohms)
- 1 kHz (DIN) ..... 32 W + 32 W (T.H.D. 1% 8 ohms)
- 1 kHz (DIN music power) ..... 45 W + 45 W (T.H.D. 1% 8 ohms)
- PMPO ..... 90 W + 90 W

Hum and Noise (IHF, short-circuited, A network)
- PHONO ..... 72 dB

Hum and Noise (DIN continous Power/50 mV)
- PHONO ..... 68 dB/60 dB

Total Harmonic Distortion (40 Hz to 20,000 Hz, 8 ohms)
- 12.5 Watts per channel power output ..... No more than 0.2%

Tape Deck Section

Systems ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head x 1
"Ferrite" erasing head x 1
Motor ..... DC servo motor x 1
Wow and Flutter ..... No more than 0.09% (WRMS)
Fast Winding Time ..... Approximately 100 seconds (C-60 tape)

Frequency Response
- −20 dB recording:
- Normal tape ..... 35 Hz to 14,000 Hz
- CrO_2 ..... 35 Hz to 15,000 Hz
- Metal tape ..... 35 Hz to 16,000 Hz

Signal-to-Noise Ratio
- Dolby NR OFF ..... 55 dB

Noise Reduction Effect
- Dolby B type NR ON ..... More than 10 dB (at 5 kHz)

Furnished Parts

Operating Instructions 1
Turntable legs parts 2

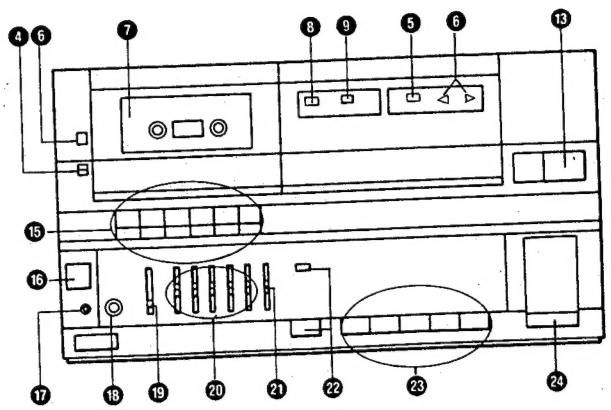
Miscellaneous

Power requirements
U.S., Canadian models ..... AC 120 V, 60 Hz
European model ..... AC 220 V, 50/60Hz
U.K. model ..... AC 240 V, 50/60 Hz
Other destination models ..... AC 110/120/220/240 V (switchable) 50/60 Hz

Power Consumption

U.S., Canadian models ..... 150 W (CSA 180 VA)
European model ..... 230 W
U.K. and Australian models ..... 230 W
Other destination models ..... 150 W
Dimensions ..... 360(W) x 190(H) x 283 (D) mm
14-3/16(W) x 7-7/16(H) x 11-1/8(D) in
Weight (without package) ..... 6.4 kg (14 lb 2 oz)

2. FRONT PANEL FACILITIES



❹ REVERSE MODE switch

Sets the reverse mode for the record/play deck.

Switch positions	Play	Record
⟲ ⟳	Continuous play	Double-side recording
⟳ —	Reverse play	Single-side recording

Continuous playback is automatically stopped after 8 round trips. Note that it will be counted as one reversal if the tape direction is changed using the direc tion switch. (One round trip will be counted if the switch is pressed twice.)

❺ Recording indicator (REC)

▭ Lights during recording. Flashes during tape copying. (DC-X55Z and DC-555Z only)

❻ Direction switch/indicator (DIRECTION)

Depress to set the recording and playback direction of the record/play deck. Direction change can be performed during recording, playback or pause.

▷ ... Lights when forward mode is selected. Flashes if tape travel is stopped during reverse recording.

◁ ... Lights when reverse mode is selected.

❼ Cassette compartment (Recording and playback)

❽ TAPE COUNTER (Record/play deck.)

3-digit display measures tape travel on record/play deck.

❾ TAPE COUNTER RESET button

⑩ COPY SPEED switch

Press to set the copy mode.

- ▮ NORMAL ... Permits you to listen to playback normally during dubbing (normal speed copying)
- ▮ HIGH ... High speed dubbing (double-speed, half-time copying)

⑪ Playback-only switches

- ◁▷ (PLAY) . Forward or reverse mode playback.
- ≪ (FAST) ..... Rewind in forward mode; fast forward in reverse mode.
- ≫ (FAST) ..... Fast forward in forward mode, rewind in reverse mode.
- ■/⏏ (STOP/EJECT) ... Stops tape travel. Ejects cassette if pressed when tape is stopped.

⑫ Synchronized copy switch (SYNCHRO COPY)

Press to start copying from Deck I to Deck II. Set the copying speed (NORMAL or HIGH) using the COPY SPEED switch.

- Press this switch only after you have set the COPY SPEED switch as desired. If this switch is pressed first, the speed cannot afterwards be changed, even if the COPY SPEED switch position is later changed.

⑬ Dolby NR switch

Press to activate noise reduction system. Use to play back tapes recorded using Dolby B NR noise reduction.

- Tapes recorded using Dolby B NR noise reduction should always be played back with the noise reduction system on. Sound quality will be adversely affected if they are played back with the system off, or if tapes recorded using a different noise reduction system are played back with the Dolby B NR system on.
- It is recommeded that tapes recorded using Dolby B NR be so marked on the label. This will help to prevent incorrect setting of the noise reduction switch during playback.

Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

⑭ Recording mute switch (REC MUTE)

Use to create blank intervals on a tape during recording. Works only while held depressed.

⑮ Record/Playback switches

- ● (REC) ..... Record
- ◁▷ (PLAY) .. Playback in forward or reverse mode.
- ≪ (FAST) ..... Rewind in forward mode, fast forward in reverse mode.
- ≫ (FAST) ..... Fast forward in forward mode, rewind in reverse mode.
- ■/⏏ (STOP/EJECT) .. Stops tape travel. Ejects cassette if pressed when tape is stopped.
- ▮▮ (PAUSE) .... Temporarily stops tape travel. Cancels pause mode when pressed again.

[AMPLIFIER/GRAPHIC EQUALIZER]

⑯ Power switch (POWER)

⑰ Headphone jack (PHONES)

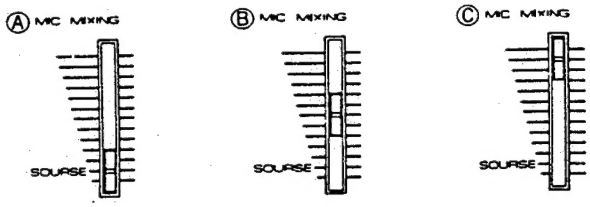
For miniature stereo phone plug.

⑱ Microphone jack (MIC)

For standard phone plug.

⑲ Mic Mixing Controls (MIC MIXING)

Adjusts balance between mic volume and volume of other input sources.



Source input emphasized	To listen to the sound from a microphone mixed with that of a radio broadcast or tape playback:	Mic input emphasized

NOTE:

- *Set the control to the SOURCE position as shown in Fig. A when not using a microphone.*
- *Source volume is cut by about 1/100 when control is set to the MIC position.*

⑳ Graphic equalizer controls (GRAPHIC EQUALIZER)

Fine adjustments in sound quality are possible using the 5 controls on the graphic equalizer.

㉑ BALANCE control

㉒ SURROUND/STEREO WIDE switch/indicator

By using this function, the sounds from stereo sources will be given new breadth, reproducing the effect of concert hall presence.

NOTE:
Stereo Wide sound has no effect on monaural sources (AM broadcasts, etc.).

㉓ Function switches (FUNCTION)

Press the button corresponding to the desired program source.

- TUNER ..... Press to listen to radio.
- VIDEO ..... Press to listen to component (Hi-Fi VCR, laser disc player, etc.) connected to the auxiliary input jacks.
- CD ..... Press to listen to CD player.
- PHONO ..... Press to listen to turntable.
- TAPE ..... Press to listen to tape playback.

㉔ Volume Control (VOLUME)

3. DISASSEMBLY

3-1 REMOVAL OF FRONT PANEL

1. Remove 5 screws ❶.
2. Remove the bonnet case.
3. Remove the connectors of 5P, 6P and 8P.
4. Remove the LED assembly.
5. Remove 2 screws ❷.
6. Press the 3 claws on the bottom and remove the front panel assembly.

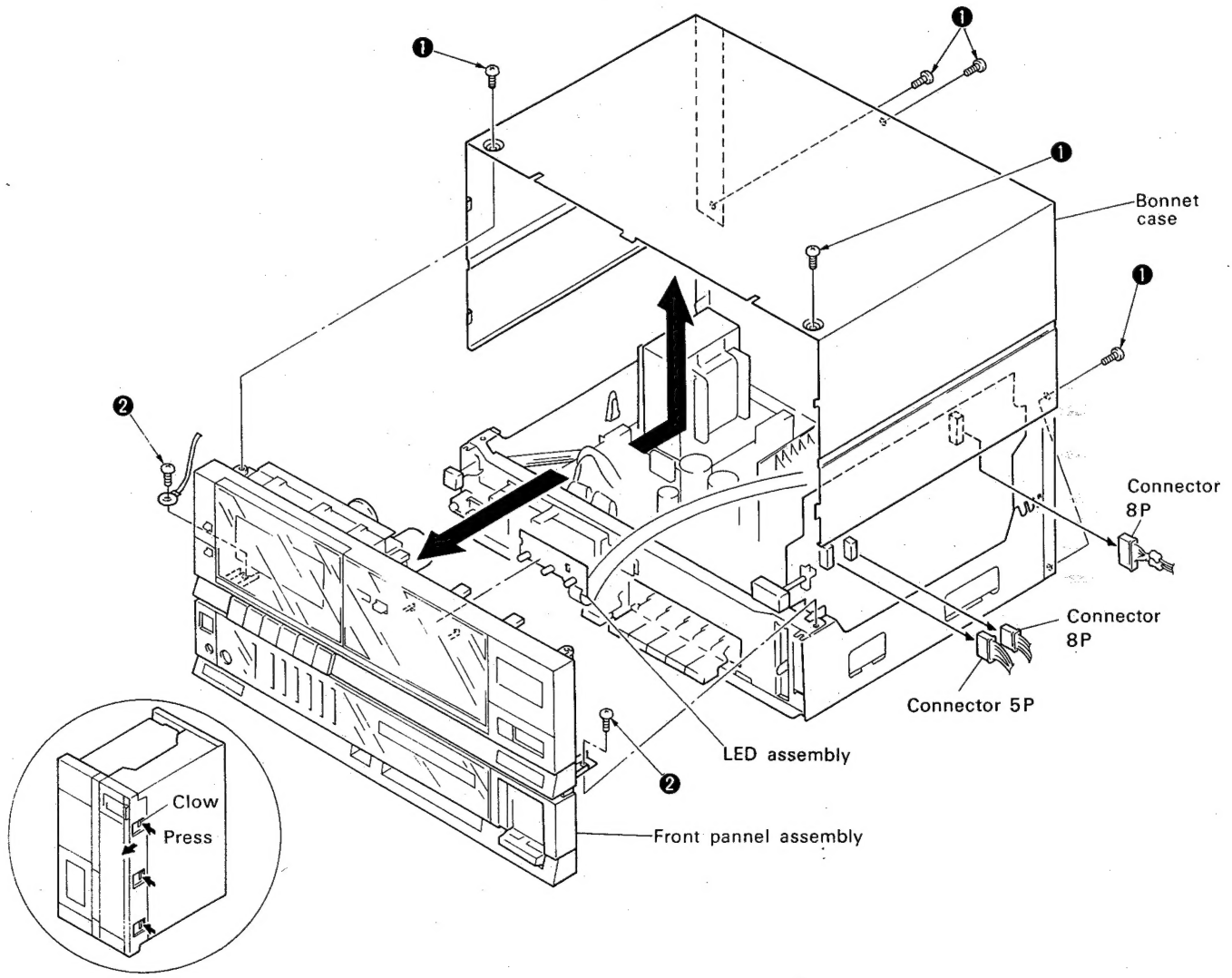


Fig. 3-1 Removal of front panel

3-2 REMOVAL OF TAPE TRANSPORT UNIT

1. Open the cassette door.
2. Detach the counter belt from the tape counter and apply it to the tape transport unit.
3. Remove 4 screws ❶
4. Detach the tape transport unit from the front panel assembly.

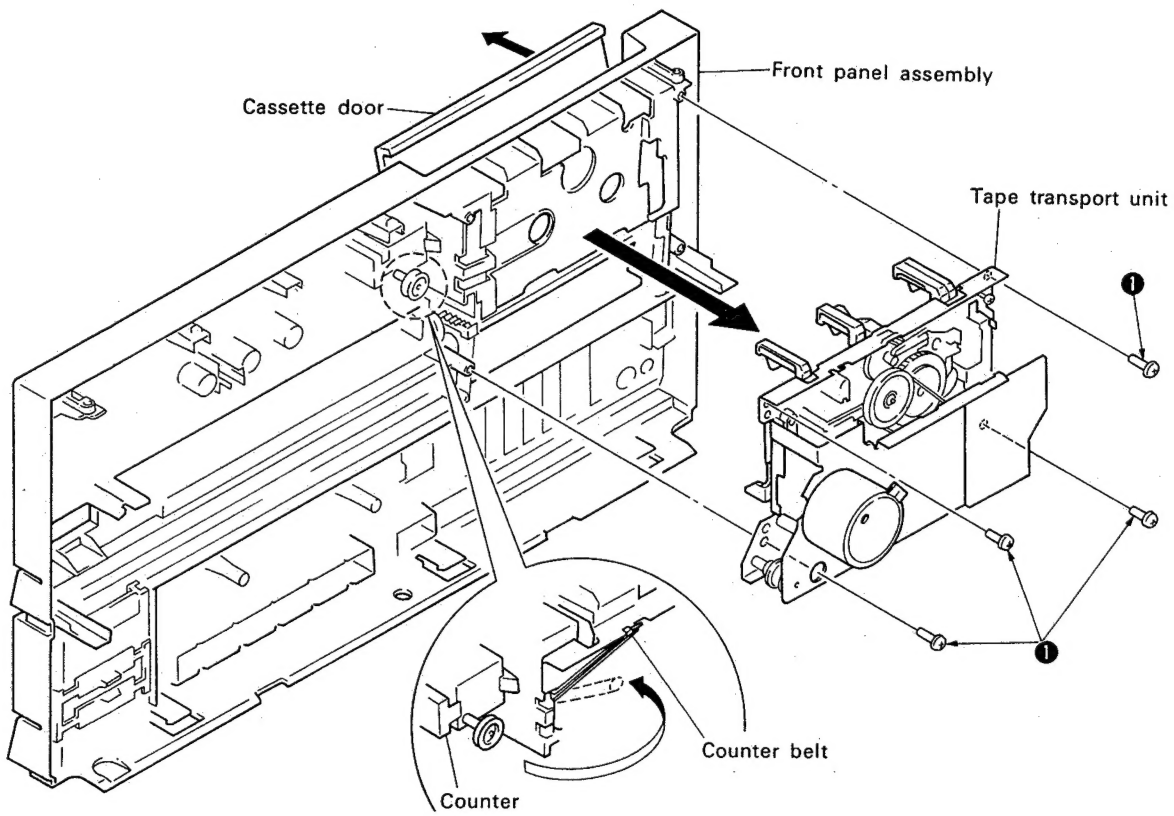


Fig. 3-2 Removal of tape transport unit

3-3 REMOVAL OF AF ASSEMBLY, TAPE ASSEMBLY, AND POWER TRANSFORMER

1. Remove 5 screws ❶
2. Remove a screw ❷ and remove one section of the PCB holder.
3. Remove the AF assembly in the direction of arrow.
4. The tape assembly can be removed by removing the connectors of 5P and 12P from the AF assembly.
5. The power transformer can be removed by removing 4 screws ❸

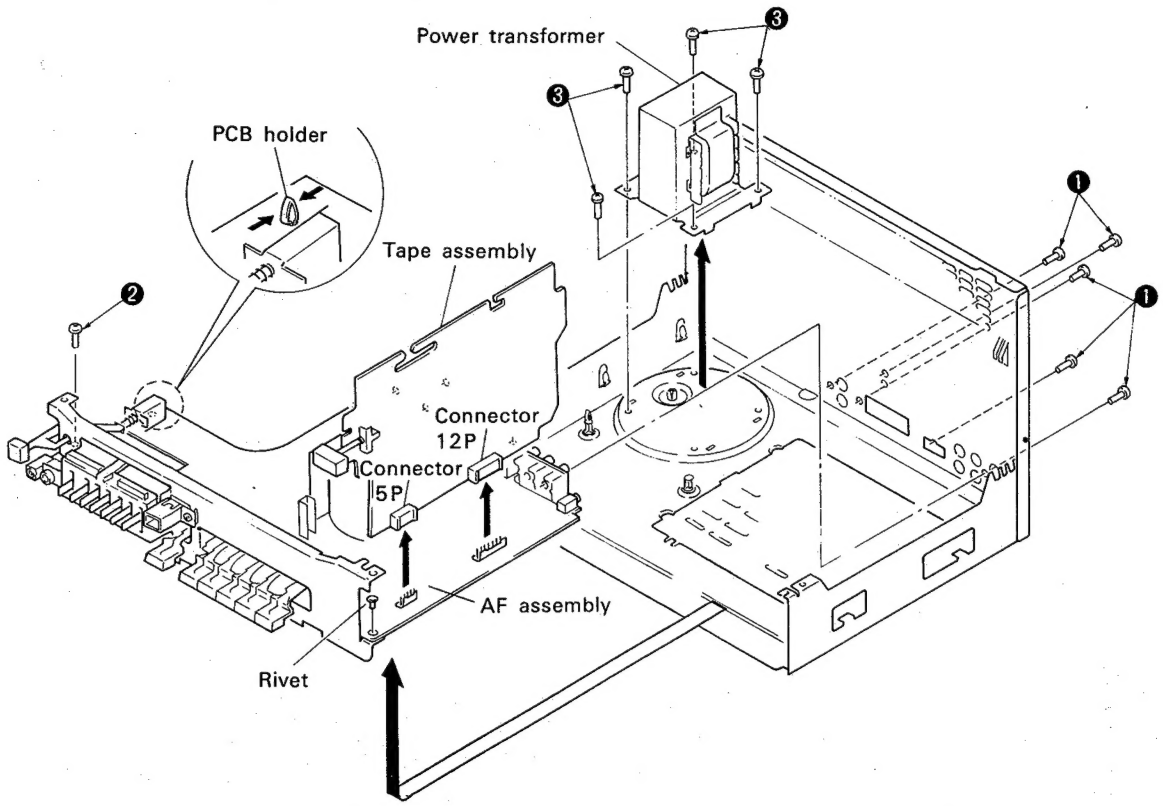


Fig. 3-3 Removal of assembly tape assembly and power transformer

3-4 REPLACEMENT AND APPLYING OF BELT

1. Remove a screw ❶ and 2 screws ❷ , and remove the motor bracket.
2. How to apply the belt is as shown in Fig. 3-4.

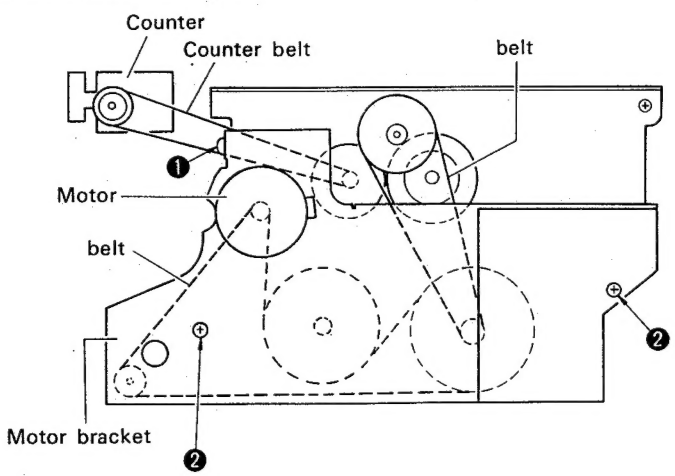


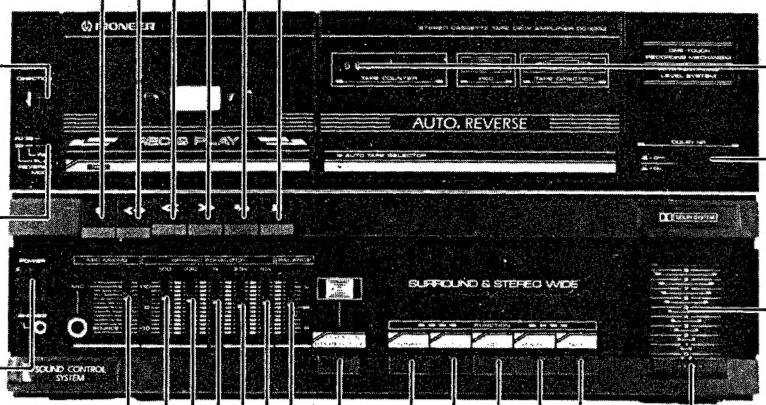
Fig. 3-4 Replacement and applying of belt

4. PARTS LOCATION

NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Front Panel View



Knob B (FAST)
AAE1002 (Black type)
AAE1019 (Silver type)

Knob A (PLAY)
AAE1001 (Black type)
AAE1018 (Silver type)

Knob F (REC)
AAE1006 (Black type)
AAE1023 (Silver type)

Knob (DIRECTION)
AAE1009

Knob (REVERSE MODE, REC/PLAY)
AAE1008

Knob (POWER)
AAD1003 (Black type)
AAD1029 (Silver type)

Slide variable resistor (VR301)
(MIC MIXING, GRAPHIC EQUALIZER, BALANCE)
ACU1001

Knob C (FAST)
AAE1003 (Black type)
AAE1020 (Silver type)

Knob D (STOP/EJECT)
AAE1004 (Black type)
AAE1021 (Silver type)

Knob E (PAUSE)
AAE1027 (Black type)
AAE1028 (Silver type)

Counter
AAW1001

Knob (DOLBY NR OFF-ON)
AAD1005 (Black type)
AAD1031 (Silver type)

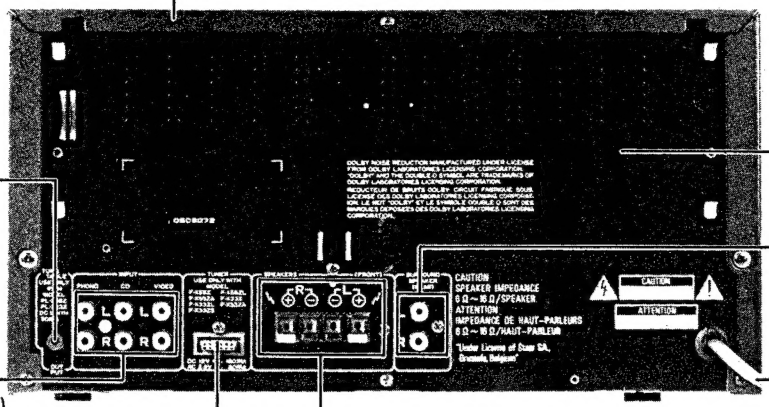
VOLUME base
AAK1001 (Black type)
AAK1065 (Silver type)

Knob (VOLUME)
AAE1010 (Black type)
AAE 1025 (Silver type)

Knob (STEREO WIDE, TUNER, VIDEO, CD, PHNO, TAPE)
AAD1004 (Black type)
AAD1030 (Silver type)

C-X33Z(BK)

Rear Panel View



Bonnet case
ANE1002 (Black type)
ANE1031 (Silver type)

Mini jack (OUT PUT)
AKN-034

Terminal (6P)
(INPUT, PHONO, CD, VIDEO)
AKB-095

Socket (6P)(TUNER)
AKP-083

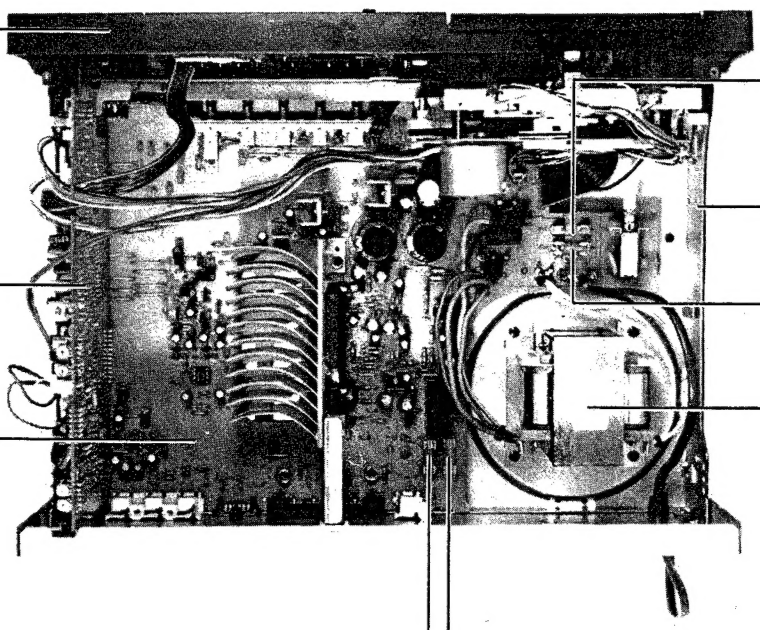
Rear panel

Terminal (2P) (OUTPUT)
AKB-093

⚠ AC Power cord (AC240V)
ADG-051

Terminal (4P)(SPEAKER)
AKE-109

Top View with Bonnet Case Removed



Front panel
AMB1009 (Black type)
AMB1051 (Silver type)

TAPE assembly
GWM-464

AF assembly
GWM-467

⚠ ★★Fuse (FU1 T1.25A)
AEK-508

Chassis

⚠ ★★Fuse (FU3 T1.6A)
AEK-510

⚠★Power transformer (T1)
(AC220V/240V)
ATS1006

⚠ ★★Fuse (FU4, FU5 T2.5)
AEK-511

5. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 . . . . . RD¼PS* 5 6 1	*J*
47kΩ	*47 × 10³*	*473 . . . . . RD¼PS* 4 7 3	*J*
0.5Ω	*0R5 . . . . . RN2H* 0 R 5		*K*
1Ω	*010 . . . . . RS1P* 0 1 0		*K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 . . . . RN¼SR* 5 6 2 1	*F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery-time may be longer than usual or they may be unavailable.*

Miscellaneous Parts

P.C BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	TAPE assembly	GWM-464
	AF assembly	GWM-467
	EQ assembly	Non supply
	MIC assembly	Non supply
	VR assembly	Non supply
	LED assembly	Non supply
	LED assembly	Non supply

OTHERS

Mark		Symbol & Description	Part No.
⚠	★	T1 Power transformer (AC 220V/240V)	ATS1006
⚠	★★	FU1 Fuse (T1.25A)	AEK-508
⚠	★★	FU3 Fuse (T1.6A)	AEK-510
⚠	★★	FU4, FU5 Fuse (T2.5A)	AEK-511
⚠		AC Power cord (AC 240V)	ADG-051
⚠		Strain relief	AEC-882

TAPE Assembly (GWM-464)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC501 PRE AMP	BA3416L
★★	IC701 TR-ARRAY	LB1214
★★	IC703 OP-AMP IC	M5218LF
★★	IC801 DECK CONTROL	PDE013
★★	IC601 DOLBY-B IC	TA7719P
★★	IC503 E-SW IC	μPC1290C
★★	Q505, Q506, Q706, Q707, Q803, Q807	2SA1115 (2SA933S)
★★	Q802	2SA1515
★★	Q511, Q512, Q518, Q601 Q602, Q703, Q704, Q705 Q708, Q709	2SC2603 (2SC1740S)
★★	Q701, Q702	2SD438
★★	Q710, Q711	2SC2878
★	D813	RD3.6ESB
★	D701—D706, D803, D807, D810, D812	1SS131
	D805	RD5.1ESB

COIL, TRANSFORMER AND FILTERS

Mark	Symbol & Description	Part No.
	F601, F602 DOLBY Filter	ATF-210
	L701 Inductor	ATH-094
	L704, L705 Inductor	ATH-117
	L702, L703 Inductor	ATH-119
	L706, L707 Trap coil	ATM-037
	T701 Bias oscillator transformer	ATX-043

SWITCHES

Mark	Symbol & Description	Part No.
★★	S701 Push switch (NOISE REDUCTION ON/OFF)	SUJL2S

CAPACITORS

Mark	Symbol & Description	Part No.
	C701 (1500pF/630V)	ACE-133
	C513, C514, C747, C748	CCCSL101J50 (CCDSL101J50)
	C751	CCCSL221J50 (CCDSL221J50)
	C803	CCCSL680J50 (CCDSL680J50)
	C705, C753	CCCSL101K500 (CCDSL101K500)
	C752, C706	CCDSL220K500
	C619, C620	CEASR33M50
	C749	CEASR47M50
	C617, C618	CEASOR1M50
	C507, C508, C601, C602, C730, C731, C750, C804,	CEAS010M50
	C613, C614, C625, C801	CEAS100M25
	C535	CEAS331M10
	C536, C623, C624, C711, C712, C732, C733	CEAS2R2M50
	C517, C518	CEAS220M16
	C509, C510, C622	CEAS221M10
	C715, C723	CEAS330M16
	C524, C525, C603, C604, C710	CEAS4R7M50
	C521, C537, C538, C621, C703, C704, C728, C729, C802	CEAS470M16
	C526, C527, C713, C714	CKCYB681K50 (CKDYB681K50)
	C605, C606	CKCYB821K50 (CKDYB821K50)
	C707, C709	CQMA103J50
	C702	CQMA123K50
	C708, C739, C740, C743, C744	CQMA153J50
	C609, C610	CQMA182J50
	C519, C520, C717, C722	CQMA273J50
	C724, C725	CQMA332J50
	C515, C516, C607, C608	CQMA333J50
	C611, C612	CQMA472J50
	C615, C616, C718, C719, C720, C721	CQMA473J50
	C726, C727	CQMA683J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	VR703, VR704 Semi-fixed	VRTB6VS223
	VR701, VR702 Semi-fixed	VRTM6H104
	VR503, VR504 Semi-fixed	VRTM6H202
	R703, R825, R718	RD1/2PM□□□J
	R521, R621, R733, R787	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

OTHER

Mark	Symbol & Description	Part No.
	Socket 12P (TUNER)	AKM-106

AF Assembly (GWM-467)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101, IC102 OP-AMP IC	M5218P
⚠ ★★	IC401 AUDIO IC	STK4141-2S
⚠ ★★	IC402, IC403 REGURATOR IC	μPC78M12H
★★	Q401	2SB1015
★★	Q101—Q108, Q402, Q403	2SC1740S (2SC2603)
★★	Q404	2SD438
★	D401	KZL150
★	D402	RD13EB
⚠ ★	D407—D412	S5566 (11E2)
★	D417	RD5.1EB
	D414	RD16EB
★	D102, D103, D415	1SS131
★	D403	1S2471
⚠ ★	D413	4D4B44 (RBV402)
★	D416	RD15ESB

SWITCHES AND RELLY

Mark	Symbol & Description	Part No.
⚠ ★★	S103 Push switch (POWER)	ASG-551
★★	S102 Push switch (STEREO WIDE)	ASG1002
★★	S101 Push switch (PHONO, CD, VIDEO, TUNER, TAPE)	SUJ8L22224L
⚠	RY401 Relly (PROTECTION)	ASR-111

COILS

Mark	Symbol & Description	Part No.
	L401, L402 AF Choke coil	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C433 (0.01μF/AC400V)	ACG1002
⚠	C430, C435 (0.01 μF/150V)	ACG-190
⚠	C431, C432	ACH-249
	C101, C103, C110, C112, C403—C406	CCCSL101J50 (CCDSL101J50)
	C141, C142	CCCSL121J50
	C424	CEASR47M100
	C117, C118, C128, C121, C122, C130	CEAS010M50
	C119, C120, C411, C413, C416, C426, C428	CEAS100M50
	C135, C136	CEASR15M50
	C412, C434	CEAS101M50
	C102, C107, C111, C115, C125, C126, C131, C132, C137, C138, C401, C402	CEAS2R2M50
	C310, C317	CEAS220M16

rt No.
M-106

rt No.
218P
K4141-2S
C78M12H
B1015
C1740S
C2603)
D438
L150
13EB
566
E2)
5.1EB
16EB
S131
2471
4B44
V402)
15ESB

rt No.
G-551
G1002
J8L22224L
R-111

rt No.
H-053

rt No.
G1002
G-190
H-249
CSL101J50
DSL101J50)
CSL121J50
ASR47M100
AS010M50
AS100M50
ASR15M50
AS101M50
AS2R2M50
AS220M16

Mark	Symbol & Description	Part No.
	C407—C410, C423, C425	CEAS221M25
⚠	C427	CEAS332M25
	C106, C108, C109, C116, C129, C415, C417, C420, C421	CEAS470M25
	C414, C429	CEAS470M50
	C422	CEAS471M6
	C127, C440	CKCYF473Z50 (CKDYF473Z50)
	C139, C140	CKCYB681K50
	C123, C124	CKCYB332K50
	C104, C113	CQMA242J50
	C418, C419, C441, C442	CQMA473K50
	C105, C114	CQMA822J50
	C133, C134	CQSA391J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R441, R442	RD1/2PMFL100J
	R432, R437, R438, R424, R425,	RD1/2PM□□□J
⚠	R419–R422	RD1/4PMF100J
⚠	R415	RD1/4PMFL101J
⚠	R413	RD1/4PMFL222J
	R403—R411, R414, R416—R418, R426—R430 R434	RD1/4PM□□□J
⚠	R412, R435	RFA1/4PL101J
⚠	R433	RFA1/4PL121J
⚠	R423	RS1LMF681J
⚠	R443	RS2LMF271J
⚠	R431, R436	RS2LMF4R7J
⚠	R444	RS2LMF221J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (OUTPUT) (2P)	AKB-093
	Terminal (INPUT, PHONO, CD, VIDEO) (6P)	AKB-095
	Terminal (SPEAKER)	AKE-109
	Mini jack (OUTPUT)	AKN-034
	6P Socket (TUNER)	AKP-083
	Rivet	AEC-940

EQ Assembly
SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	IC301, IC302 AUDIO IC	BA3812L

CAPACITORS

Mark	Symbol & Description	Part No.
	C313, C326	CEASR15M50
	C315, C328	CEASR68M50
	C308, C323	CEAS101M10
	C301, C302	CEAS4R7M50
	C309	CEAS470M25
	C305, C318	CKCYB182K50 (CKDYB182K50)
	C307, C322	CKCYB331K50 (CKDYB331K50)
	C303, C320	CKCYB391K50 (CKDYB391K50)
	C312, C325	CKCYB392K50 (CKDYB392K50)
	C304, C321	CKCYB682K50 (CKDYB682K50)
	C306, C319	CKCYX153M25 (CKDYX153M25)
	C314, C327	CKCYX183M25 (CKDYX183M25)
	C316, C329	CKCX393M25 (CKCX393M25)
	C311, C324	CKCYX683M25 (CKDYX683M25)

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★★	VR301 Slide variable resistor	ACU1001
	Other resistors	RD1/8PM□□□J

MIC Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q202	2SA933S (JA101)
★★	Q201	2SC1740S (2SC2603)

CAPACITORS

Mark	Symbol & Description	Part No.
	C202	CEASR47M50
	C206	CEAS101M25
	C204	CEAS100M50
	C205	CEAS470M25
	C201	CKCYB102K50 (CKDYB102K50)
	C203	CKCYB392K50
	C207, C208	CKCYF473Z50 (CKDYF473Z50)

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	MIC jack (MIC)	AKN-052
	Mini jack (PHONES)	AKN1001

VR Assembly

Mark	Symbol & Description	Part No.
★★	VR401 (VOLUME)	ACU1002

LED Assembly
SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★	D101 LED	AEL-443

LED Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q902	2SC2603
★	D911 LED	AEL-382
★	D909, D910 LED	AEL-424
★	D908	1SS131

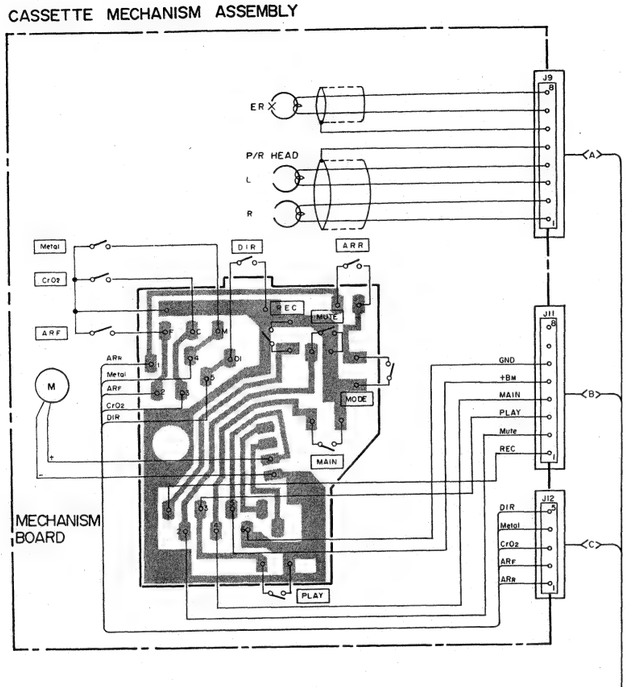
RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

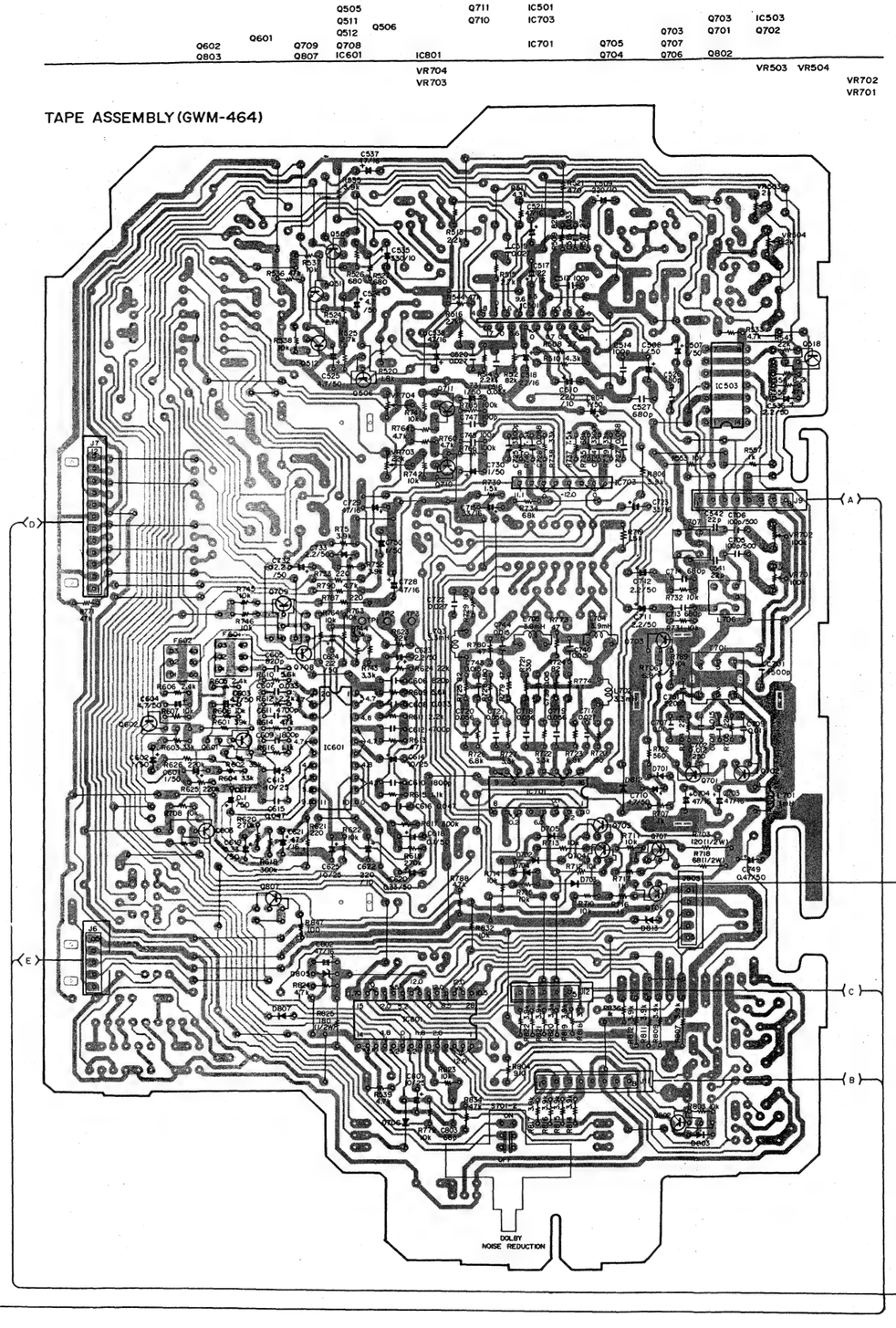
6. P.C.BOARDS CONNECTION DIAGRAM

CASSETTE MECHANISM ASSEMBLY



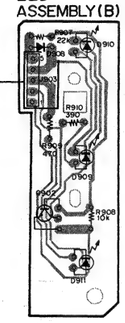
IC501	BA3416L	Q511, Q512, Q518, Q601, Q602, Q703–705, Q708, Q709 2SC2603 (2SC1740S)
IC503	μPC1290C	Q505, Q506, Q706, Q707, Q803, Q807 2SA1115 (2SA933S)
IC601	TA7719P	Q802 2SA1515
IC701	LB1214	Q701, Q702 2SD438
IC703	M5218LF	Q710, Q711 2SC2878
IC801	PDE013	D701 ~ D706, D803, D807, D812 1SS131
		D805 RD5.1ESB
		D813 RD3.6ESB

TAPE ASSEMBLY (GWM-464)



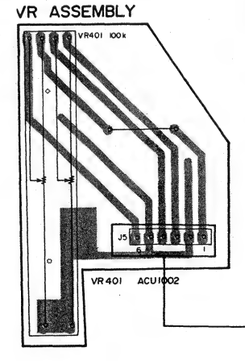
IC101, IC102	M5218P	
IC402, IC403	μPC78M12H	
IC401	STK441-2S	
Q101 – Q108, Q402, Q403	2SC1740S (2SC2603)	
Q401	2SB1015	
Q404	2SD438	
D102, D103, D415	1SS131	
D401	KZL150	
D402	RD13EB	
D403	1S2471	
D407 – D412	S5566 (11E2)	
D413	4D4B44 (RBV402)	
D414	RD16EB	
D416	RD15ESB	
D417	RD5.4EB	

LED ASSEMBLY (B)

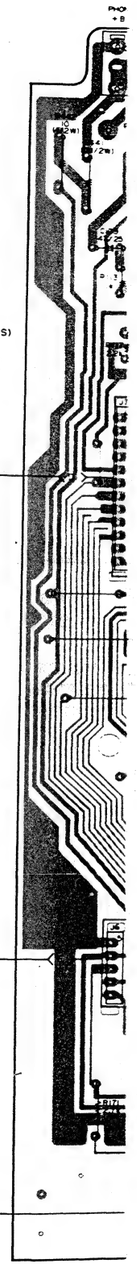


Q902	2SC2603 (2SC1740S)	
D908	1SS131	
D909, 910	AEL-424	
D911	AEL-382	

VR ASSEMBLY



AF ASSEM



IC101 IC102 Q105 Q108 IC102 Q103 Q106 Q107 Q104 Q401 IC401 IC402 IC403 Q402 Q403 Q404 Q101 Q102

AF ASSEMBLY (GWM-467)

IC101, IC102	M5218P
IC402, IC403	μPC78M12H
IC401	STK4141-2S
Q101 - Q108, Q402, Q403 2SC1740S (2SC2603)	
Q401	2SB1015
Q404	2SD438
D102, D103, D415	1SS131
D401	KZL150
D402	RD13EB
D403	IS2471
D407 - D412	S5566 (IIE2)
D413	4D4B44 (RBV402)
D414	RD16EB
D416	RD15ESB
D417	RD5.1EB

PHONO +B 12V
PHONO
CD
VIDEO /AUX
TUNER
SPEAKERS
SURROUND SPEAKERS

EQ ASSEMBLY

VR 301
IC301, IC302 BA3812L

LED ASSEMBLY (B)

Q902	2SC2603 (2SC1740S)
D908	1SS131
D909, 910	AEL-424
D911	AEL-382

SSEMBLY

VR401 100k
VR401 ACU1002

F
G

T1 : POWER TRANSFORMER ATS1006

AC POWER CORD ADG-051
AC 240V 50/60Hz

FU1 T1.25A
POWER

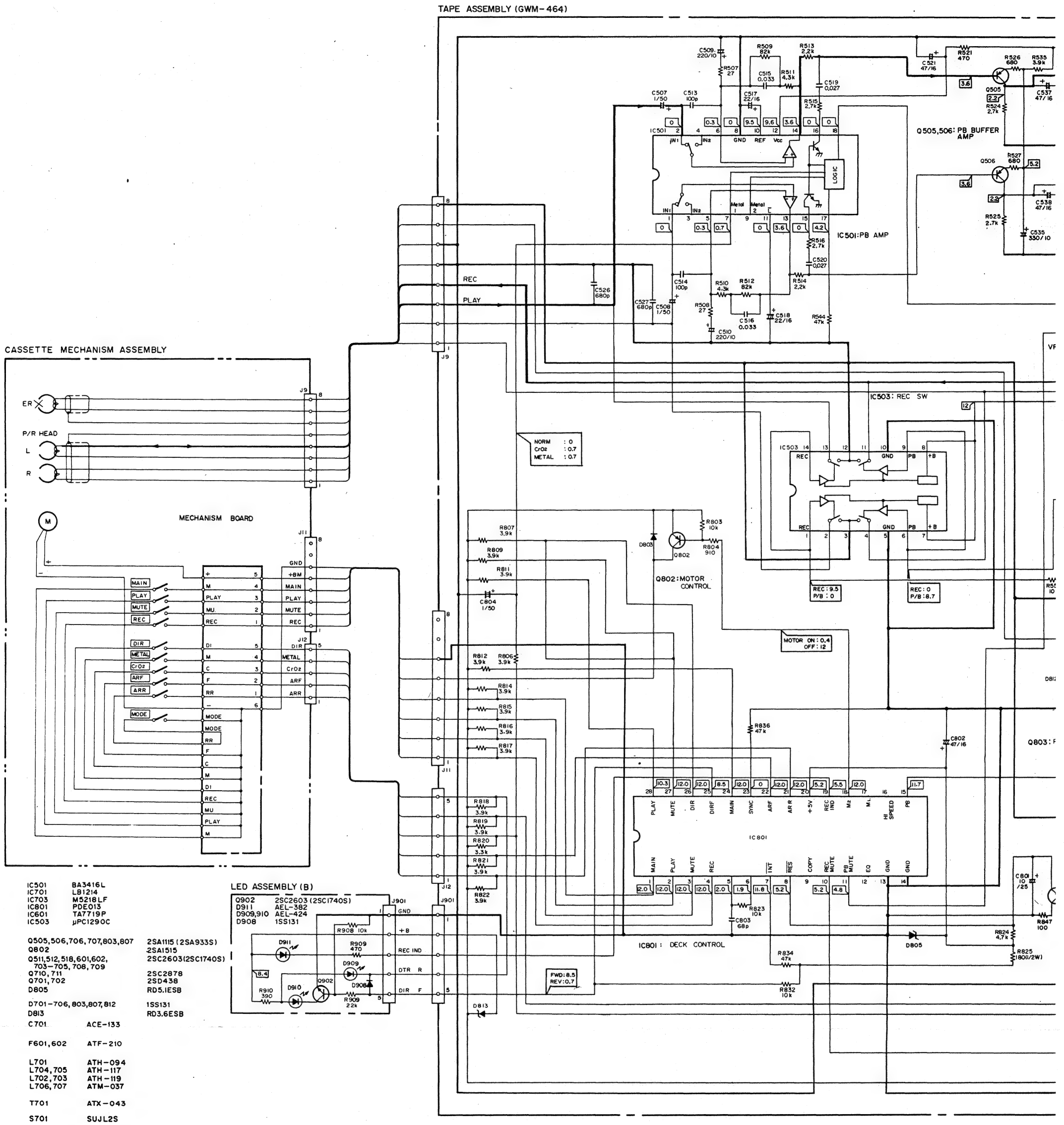
MIC ASSEMBLY

Q201 2SC1740S
Q202 2SA933S
MIC
HEADPHONE

LED ASSEMBLY (A)

D101 AEL-443

7. SCHEMATIC DIAGRAM



VR503 : PB LEVEL Adj Lch

VR504 : PB LEVEL Adj Rch

Q512,511 : PB MUTING

IC601 : DOLBY PROCESSER

Q601,602 : DOLBY FILTER AMP

VR701,702 : REC BIAS Adj

Q518 : REC SW CONTROL

Q706 : REC BIAS METAL SW

MUTE ON : 4.8
OFF : 0.1

IC 703 : REC AMP

Q707 : REC BIAS Cr02 SW

REC
Norm : 5.7
Cr02 : 8.5
Metal : 12.0
PB : 12.0

Q701,702 : REC BIAS OSC

Q703 : REC BIAS OSC SW

IC701 : REC EQ SW

Q803 : REC/PB SELECT INVERTER

Q705 : REC EQ SW CONTROL

IC701	NORM	Cr02	METAL
NORM	4.4	0	0
Cr02	0.2	2.7	0
METAL	0.2	0.2	6.0

Q807 : RESET GENERATOR

Q710,711 : REC MUTING

VR704 : REC LEVEL Adj Lch

VR703 : REC LEVEL Adj Rch

REC MUTE
ON 2.0
OFF 0

EQ ASSEMBLY

IC301, 302: GRAPHIC EQUALIZER

AF ASSEMBLY (GWM-467)

IC101: RIAA EQ AMP

IC102: SURROUND AMP

Q101, 102: BUFFER AMP

Q103, 104, 108, 107: ALC

Q401: -12V REGULATOR

Q105, 108: BUFFER AMP

IC401: POWER

PHONO 2.5mV/50kΩ

CD 240mV/30kΩ

VIDEO/AUX 150mV/30kΩ

TUNER

TAPE

PLAY

TP1 (TAPE R)

TP2 (TAPE L)

TP3

Q708, 709: PB MUTING

DOLBY OFF: 5.3
DOLBY ON P/B: 0.5
REC: 11.9

S701-2 DOLBY

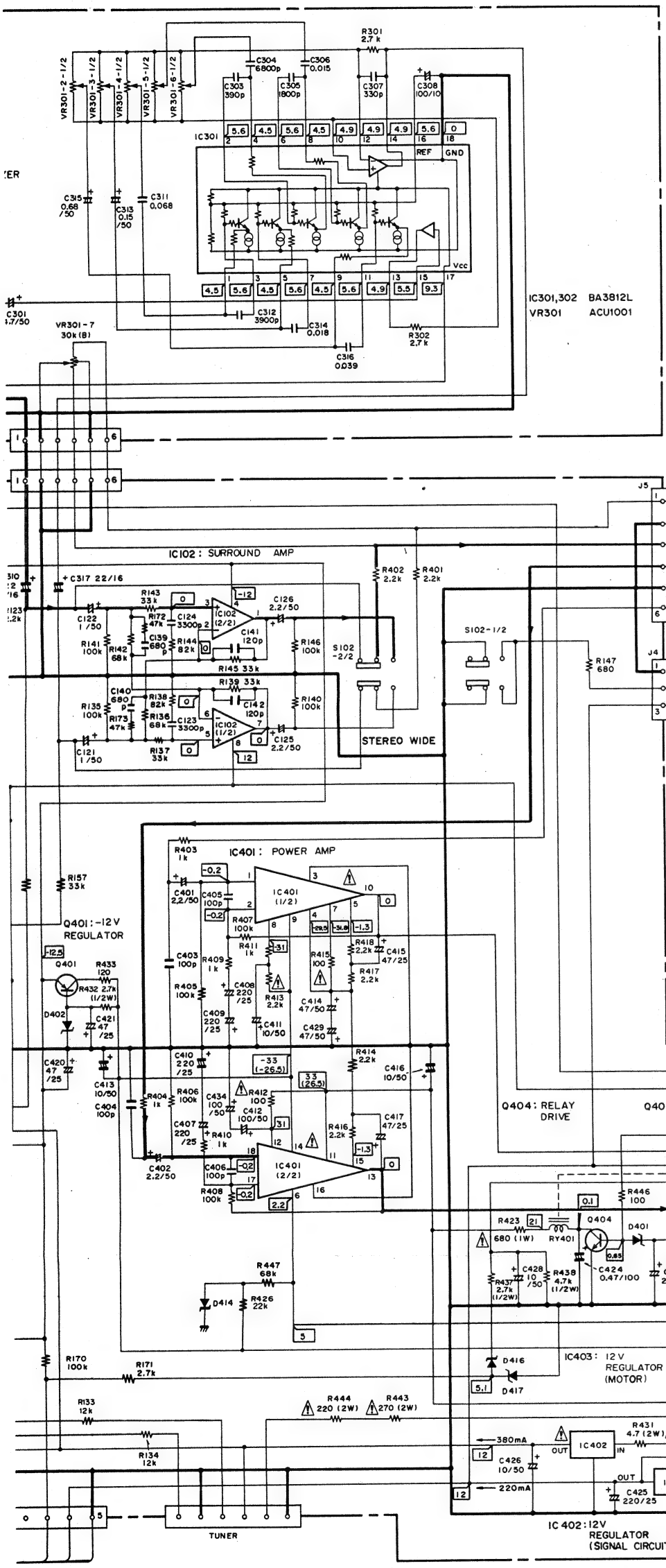
ON-OFF

REC MUTE
ON: 5.2
OFF: 0.1

R704: REC LEVEL
Adj Lch

Adj Rch

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   V ; Signal voltage at **32** W + **32** W, 8Ω output (1 kHz)
   ; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA; DC current at no input signal
4. OTHERS:
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:
   THE UNDERLINED INDICATES THE SWITCH POSITION

TAPE ASSEMBLY

S701-2 NOISE REDUCTION	ON—OFF

AF ASSEMBLY

S101-1 FUNCTION PHONO	ON—OFF
S101-2 FUNCTION CD	ON—OFF
S101-3 FUNCTION VIDEO	ON—OFF
S101-4 FUNCTION TUNER	ON—OFF
S101-5 FUNCTION TAPE	ON—OFF
S102 SURROUND STEREO WIDE	ON—OFF
S103 POWER	ON—OFF

OTHERS

CASSETTE MECHANISM ASSEMBLY

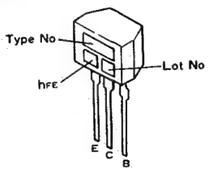
MAIN	ON- OFF
PLAY	ON— OFF
MUTE	ON— OFF
REC	ON— OFF
DIR	ON— OFF
Metal	ON— OFF
CrO_2	ON— OFF
AR_F	ON— OFF
AR_R	ON— OFF

AF ASSEMBLY

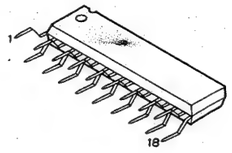
IC101,102	M5218P	C433	ACG1002
IC401	STK4141-2S	C430,435	ACG-190
IC402,403	μPC78M12H	C431,432	ACH-249
Q401	2SB1015	FU1	AEK-507
Q101-108, 402, 403	2SC1740S (2SC2603)	FU3	AEK-510
Q404	2SD438	FU4,5	AEK-511
D401	KZL150		
D402	RD13EB		
D407-D412	S5566 (11E2)		
D102,103, 415	1SS131		
D403	1S2471		
D413	4D4B44 (RBV402)		
D414	RD16EB		
D416	RD15ESB		
D417	RD5.1EB		
S101	SUJ8L22224L		
S102	ASG1002		
S103	ASG-551		
RY401	ASR-111		
L401,402	ATH-053		

External Appearance of Transistors and ICs

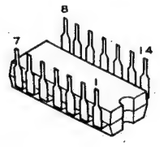
2SA933S
2SC1740S



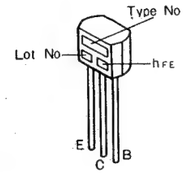
BA3812L
BA3416L



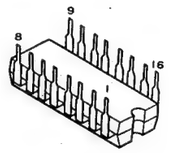
μPC1290C



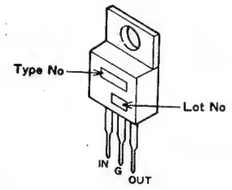
2SA1115
2SC2603



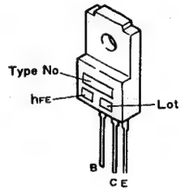
LB1214
PDE013



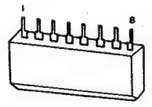
μPC78M12H



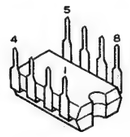
2SB1015



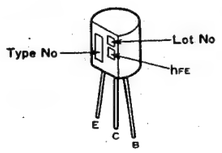
M5218LF



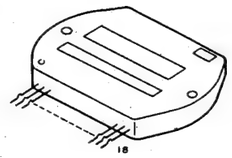
M5218P



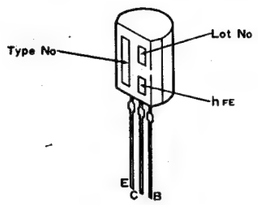
2SA1515
2SC2878



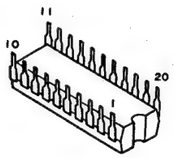
STK4171



2SD438



TA7719F

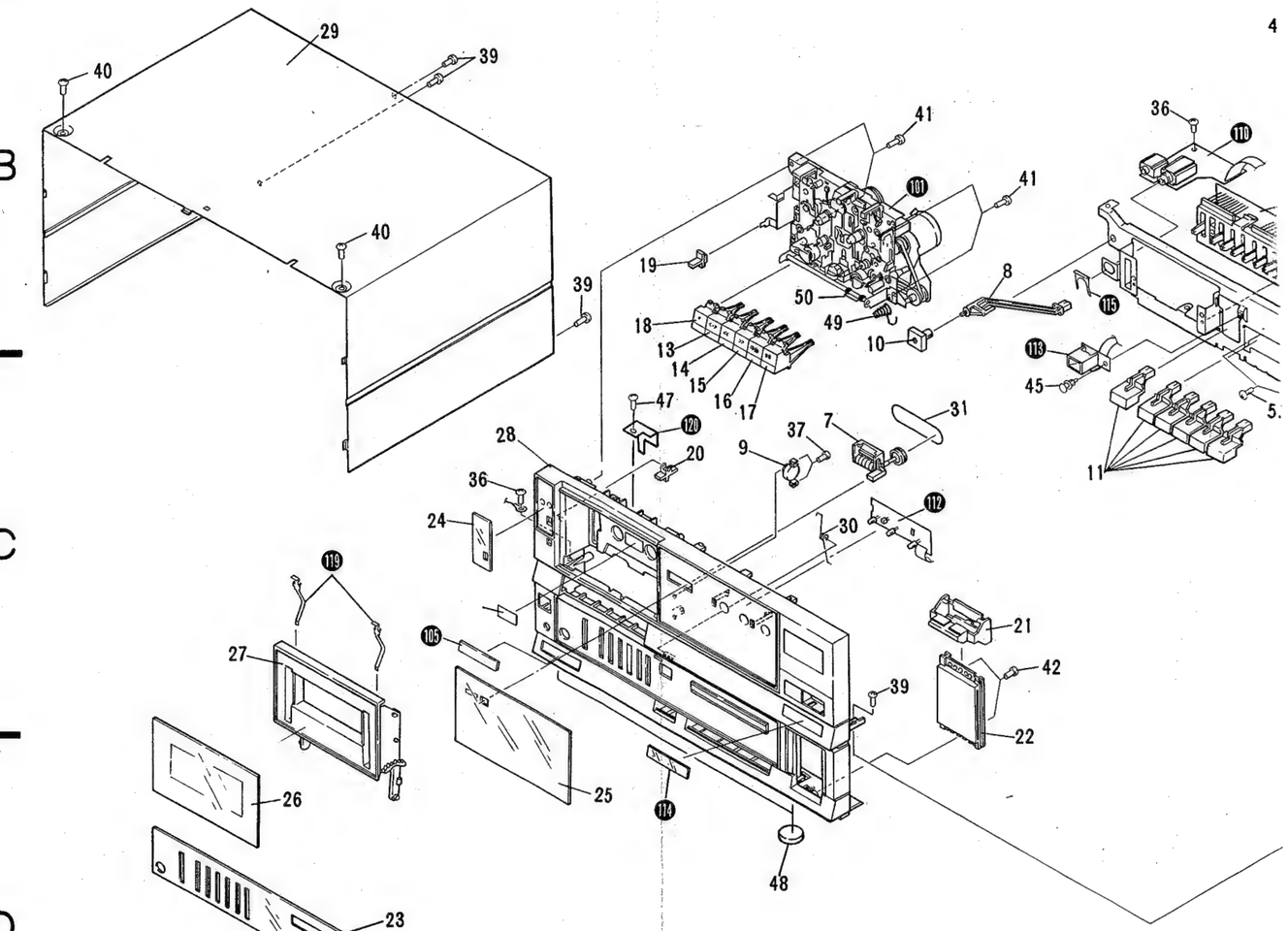


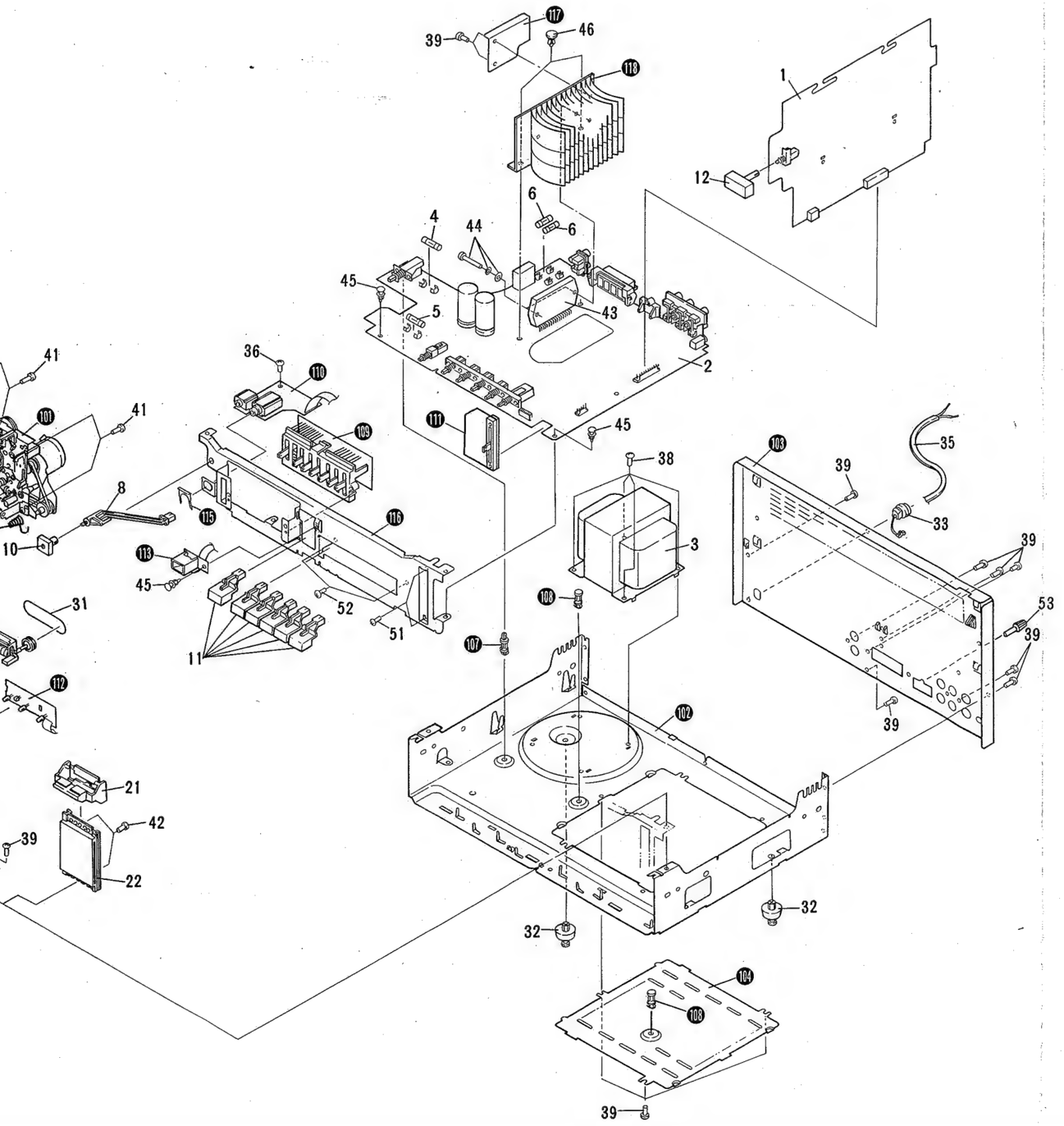
8. EXPLODED VIEWS

8.1 Exterior

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*



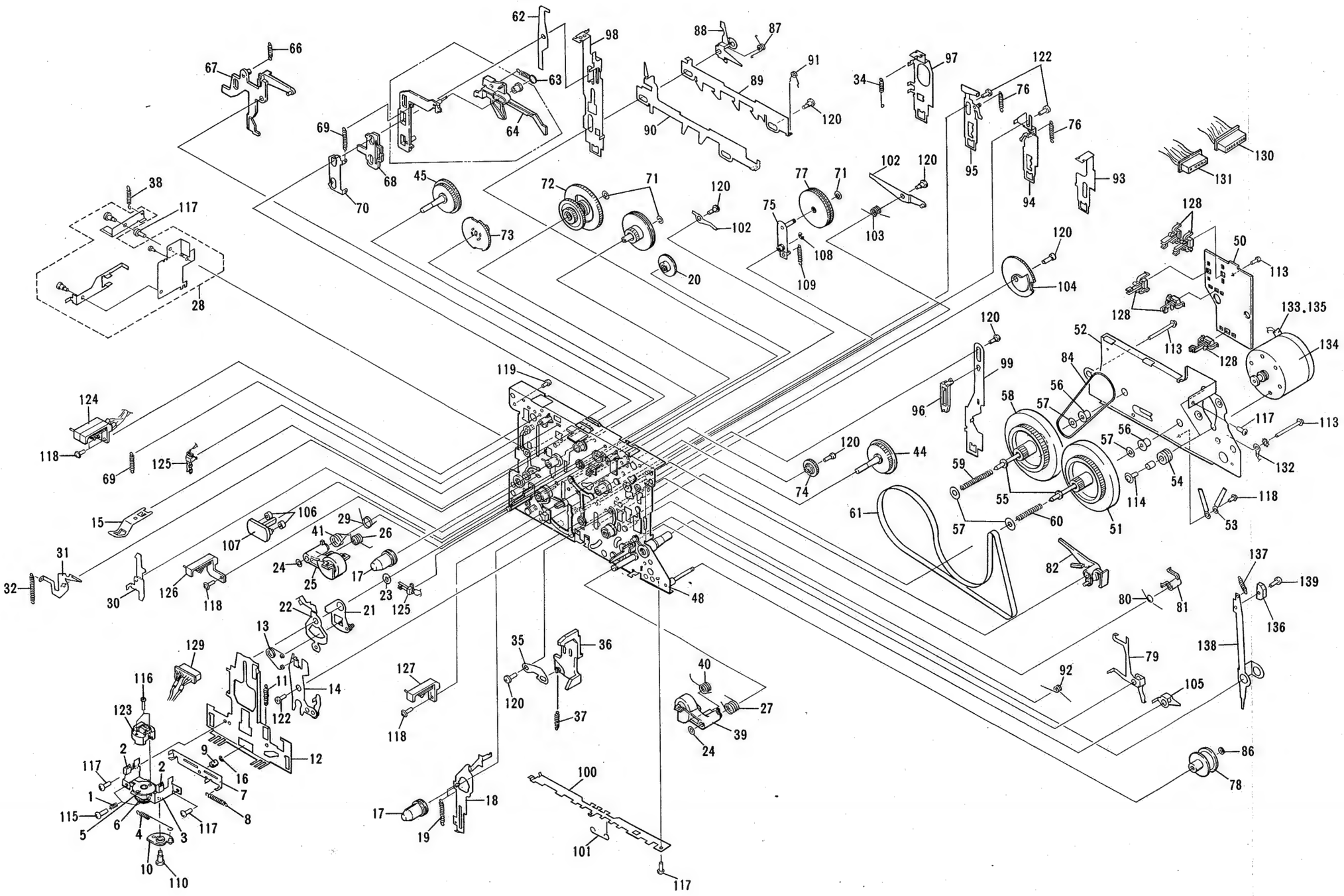


Parts List

Mark	No.	Part No.	Description
	1	GWM-464	TAPE assembly
	2	GWM-467	AF assembly
⚠ ★	3	ATS1006	Power transformer (T1) (AC 220V/240V)
⚠	4	AEK-508	Fuse (FU1 T1.25A)
⚠	5	AEK-510	Fuse (FU3 T1.6A)
⚠	6	AEK-511	Fuse (FU4, FU5 T2.5A)
	7	AAW1001	Counter
	8	AMR1003	Power joint
	9	AMR1006	Damper assebmly
	10	AAD1003 (Black type) AAD1029 (Silver type)	Knob (POWER)
	11	AAD1004 (Black type) AAD1030 (Silver type)	Knob (STEREO WIDE, TUNER, CD, PHONO, TAPE)
	12	AAD1005 (Black type) AAD1031 (Silver type)	Knob (DOLBY NR OFF-ON)
	13	AAE1001 (Black type) AAE1018 (Silver type)	Knob A (PLAY)
	14	AAE1002 (Black type) AAE1019 (Silver type)	Knob B (FAST)
	15	AAE1003 (Black type) AAE1020 (Silver type)	Knob C (FAST)
	16	AAE1004 (Black type) AAE1021 (Silver type)	Knob D (STOP/EJECT)
	17	AAE1027 (Black type) AAE1028 (Silver type)	Knob E (PAUSE)
	18	AAE1006 (Black type) AAE1023 (Silver type)	Knob F (REC)
	19	AAE1008	Knob (REVERSE MODE, REC/PLAY)
	20	AAE1009	Knob (DIRECTION)
	21	AAE1010 (Black type) AAE1025 (Silver type)	Knob (VOLUME)
	22	AAK1001 (Black type) AAK1065 (Silver type)	VOLUME base
	23	AAK1002	AMP panel
	24	AAK 1013 (Black type) AAK 1073 (Silver type)	Deck panel (A)
	25	AAK 1014	Deck panel (B)
	26	AAK1015	Door panel
	27	AAN1001	Door
	28	AMB 1009 (Black type) AMB 1051 (Silver type)	Front panel
	29	ANE1002 (Black type) ANE1031 (Silver type)	Bonnet case
	30	ABH1001	Coil spring
★	31	AEB-308	Counter belt
	32	AEC-847	Leg assembly
⚠	33	AEC-882	Strain relief
	34	ABA1003	Screw
⚠	35	ADG-051	AC Power cord
	36	BBT30P080FMC	Screw
	37	BBZ20P100FMC	Screw
	38	BBZ30P060FZK	Screw
	39	BBZ30P080FZK	Screw
	40	VPZ30P080FZK (Black type) VPZ30P080FUC (Silver type)	Screw (BLACK) Screw (SILVER)
	41	VPZ30P100FMC	Screw
	42	BPZ30P080FZK	Screw
★★	43	STK4141-2S	AUDIO IC
	44	ABA-271	Screw
	45	AEC-525	Rivet
	46	AEC-940	Rivet
	47	BBZ30P040FMC	Screw
	48	AEB1012	Non slip sheet
	49	ABH1010	Sub spring
	50	ABH1008	PAUSE spring
	51	PMZ20P030FZK	Screw
	52	VMZ30P060FMC	Screw
	53	ABA-176	Earth terminal
	101		Cassette mechanism (Tape transport unit) assembly
	102		Chassis
	103		Rear panel
	104		Bottom plate
	105		AMP bage
	106		.....
	107		P.C.B Holder
	108		P.C.B Support
	109		EQ assembly
	110		MIC assembly
	111		VR assembly
	112		LED assembly
	113		LED assembly
	114		Deck bage
	115		Mount plate
	116		Unit stay
	117		Heat sink holder
	118		Heat sink
	119		Plate
	120		Mount plate

1 2 3 4 5 6

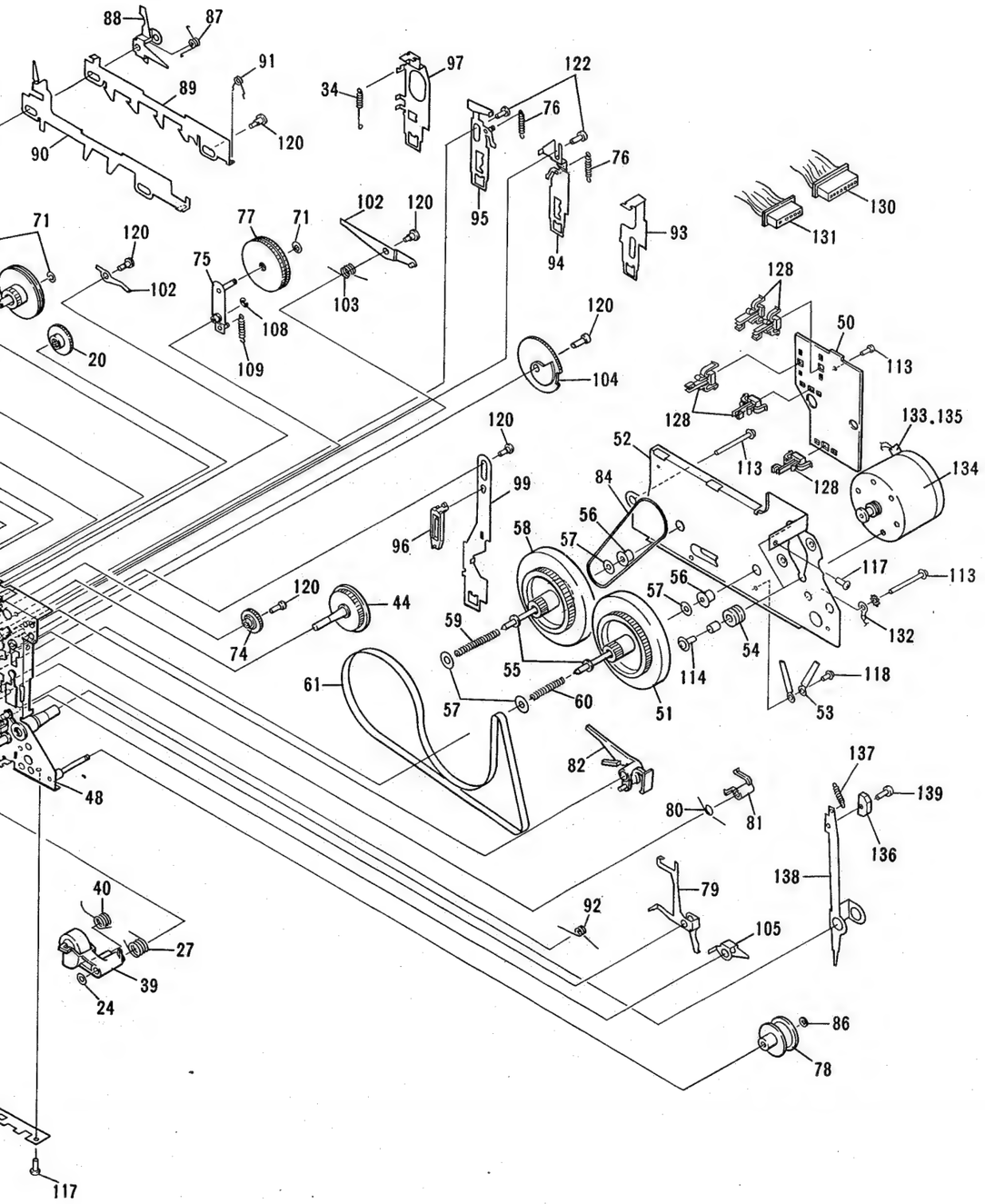
Transport Unit



Parts List of Tape Transpo

Mark	No.	Part No.
A	1	AZN1055
	2	AZN1056
	3	AZN1057
	4	AZN1059
	5	AZN1060
—		
	6	AZN1062
	7	AZN1063
	8	AZN1064
	9	AZN1065
	10	AZN1066
	11	AZN1067
	12	AZN1068
	13	AZN1069
	14	AZN1070
	15	AZN1071
B	16	AZN1072
	17	AZN1073
	18	AZN1074
	19	AZN1075
	20	AZN1076
	21	AZN1077
	22	AZN1078
	23	AZN1079
	24	AZN1080
	25	AZN1081
	26	AZN1082
	27	AZN1083
	28	AZN1084
	29	AZN1085
	30	AZN1086
C	31	AZN1087
	32	AZN1088
	33	AZN1089
	34	AZN1090
	35	AZN1091
	36	AZN1092
	37	AZN1093
	38	AZN1094
	39	AZN1095
	40	AZN1096
D	41	AZN1097
	42	AZN1098
	43	AZN1099
	44	AZN1100
	45	AZN1101
	46	AZN1103
	47	AZN1112
	48	AZN1105
	49	AZN1106
	50	AZN1111

1 2 3 4 5 6



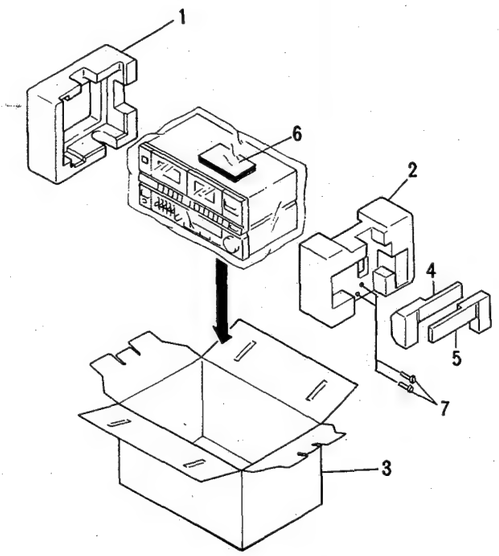
Parts List of Tape Transport Unit

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	AZN1055	Pressure spring		51	AZN1113	Flywheel assembly (R)
	2	AZN1056	Tape guide		52	AZN1114	F/W base plate
	3	AZN1057	Metal assembly		53	AZN1115	Wire holder assembly
	4	AZN1059	Head GR spring		54	AZN1116	Gom washer
	5	AZN1060	Head holder assembly		55	AZN1118	P washer
	6	AZN1062	Head gear (A)		56	AZN1119	Metal
	7	AZN1063	Slide plate assembly		57	AZN1120	P washer 2.6x8x0.13
	8	AZN1064	Slide plate spring		58	AZN1121	Flywheel assembly (L)
	9	AZN1065	Collar		59	AZN1122	Pressure spring (black)
	10	AZN1066	Head gear (B)		60	AZN1123	Pressure spring (white)
	11	AZN1067	Return spring		61	AZN1124	Flat belt
	12	AZN1068	Head base		62	AZN1125	Rerease lever
	13	AZN1069	Reverse spring		63	AZN1126	Spring
	14	AZN1070	Pinch lever assembly		64	AZN1127	Detector lever assembly
	15	AZN1071	Harf set arm		65	AZN1128	Spring
	16	AZN1072	P washer		66	AZN1129	Spring
	17	AZN1073	Real claw		67	AZN1130	DIR lever
	18	AZN1074	Sub-plate assembly		68	AZN1131	Mode lever
	19	AZN1075	Head-return spring		69	AZN1132	Coiled spring
	20	AZN1076	Idler gear		70	AZN1133	Mode plate
	21	AZN1077	Idler assembly		71	AZN1134	P washer 1.6x4x0.25
	22	AZN1078	Reverse assembly A		72	AZN1135	Tension pulley assembly
	23	AZN1079	P washer 1.3x3x0.25		73	AZN1136	Reverse gear
	24	AZN1080	P washer		74	AZN1137	FWD gear
	25	AZN1081	Pinch arm assembly		75	AZN1138	FF idler assembly
	26	AZN1082	Twist spring		76	AZN1139	FF REW gear spring
	27	AZN1083	Pinch roller-return spring		77	AZN1140	FF idler assembly
	28	AZN1084	Mounting plate assembly		78	AZN1141	Idler assembly
	29	AZN1085	Rec prevent spring		79	AZN1142	Anti-detect plate
	30	AZN1086	Rec prevent plate		80	AZN1143	Twist spring
	31	AZN1087	MO joint plate		81	AZN1144	Clutch stopper
	32	AZN1088	Coiled spring		82	AZN1145	Anti-detect lever
	33	AZN1089	Reverse sub-plate		83	AZN1146	Drive pulley
	34	AZN1090	Reverse spring		84	AZN1147	Square belt
	35	AZN1091	Latch slide plate		85		.....
	36	AZN1092	Latch lever		86	AZN1151	Washer
	37	AZN1093	Latch-return spring		87	AZN1152	SW drive spring
	38	AZN1094	DIR lever spring		88	AZN1153	SW push plate
	39	AZN1095	Pinch arm assembly (R)		89	AZN1155	REC/PB side stopper plate
	40	AZN1096	Twist spring		90	AZN1156	Stopper plate
	41	AZN1097	Pinch roller-return spring		91	AZN1157	Stopper plate spring
	42	AZN1098	Button holder		92	AZN1158	Stop pause spring
	43	AZN1099	Collar		93	AZN1160	Stop plate
	44	AZN1100	Reel base assembly (R)		94	AZN1161	FF plate assembly
	45	AZN1101	Reel base assembly (F)		95	AZN1162	REW plate assembly
	46	AZN1103	Button shelt		96	AZN1163	PAUSE arm
	47	AZN1112	Reinforced plate		97	AZN1164	PLAY plate
	48	AZN1105	Mechanism assembly		98	AZN1165	REC plate
	49	AZN1106	Button holder (L)		99	AZN1166	PAUSE plate
	50	AZN1111	P.C. board (II)		100	AZN1168	Button holder plate

Mark	No.	Part No.	Description
	101	AZN1169	Lead clamper
	102	AZN1170	Assist arm assembly
	103	AZN1171	Trigger return spring
	104	AZN1172	Assist gear
	105	AZN1173	Pause arm
	106	AZN1174	Collar (B)
	107	AZN1175	Reverse cam assembly
	108	AZN1177	E-ring
	109	AZN1179	FF idler plate spring
	110	AZB1032	Step screw
	111	AZB1033	Step screw
	112	AZB1034	Washer
	113	AZB1036	Flange screw
	114	AZB1037	Motor mounting screw
	115	AZB1038	Pan-screw
	116	AZB1039	Screw
	117	AZB1040	Screw
	118	AZB1041	Flange screw
	119	AZB1042	FT screw
	120	AZB1045	Bushing

Mark	No.	Part No.	Description
	121	AZB1046	Bind screw
	122	AZB1047	Bushing
	123	AZP1006	Head assembly (REC/PB and ERASE)
	124	AZS1012	Leaf switch (ARF SW)
	125	AZS1013	Leaf switch
	126	AZS1014	Leaf switch (Metal SW)
	127	AZS1015	Leaf switch (ARR SW)
	128	AZS1016	Leaf switch (P.C. board)
	129	AZK1029	8P connector
	130	AZK1030	8P connector
	131	AZK1031	5P connector
	132	AZD1003	Ground wire
	133	AZD1005	Jumper
	134	AZX1006	Motor assembly
	135	AZD1006	Jumper
	136	AZN1148	Magnet
	137	AZN1149	Magnet spring
	138	AZN1150	Magnet arm
	139	AZB1043	Screw

9. PACKING



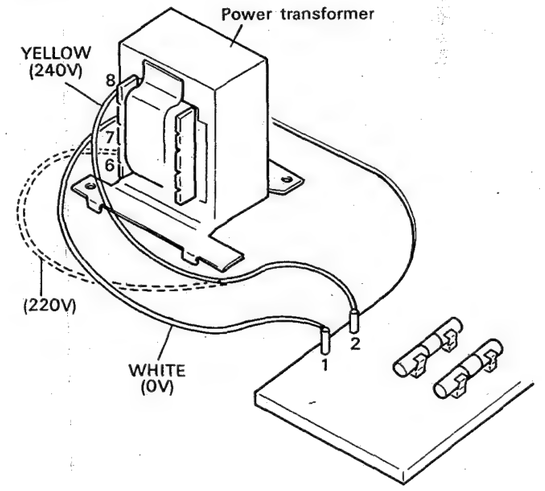
Parts List

Mark	No.	Part No.	Description
	1	AHA1001	Side pad (L)
	2	AHA1002	Side pad (R)
	3	AHD1007 (Black type) AHD1054 (Silver type)	Packing case
	4	AMR1060 (Black type) AMR1062 (Silver type)	Player stand (L)
	5	AMR1061 (Black type) AMR1063	Player stand (R)
	6	ARB1001	Operating instruction (English)
	7	ABA1003	Screw

LINE VOLTAGE SELECTION (FOR HE AND HB TYPES)

Line voltage can be changed as follows:
1. Disconnect the AC power cord.
2. Remove the bonnet case.
3. Change the connection of the power transformer primary taps.
4. Stick the line voltage lable on the rear panel.

	Description	Part No.
	220V label	AAX-193
	240V label	AAX-192



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EC/PB and ERASE)
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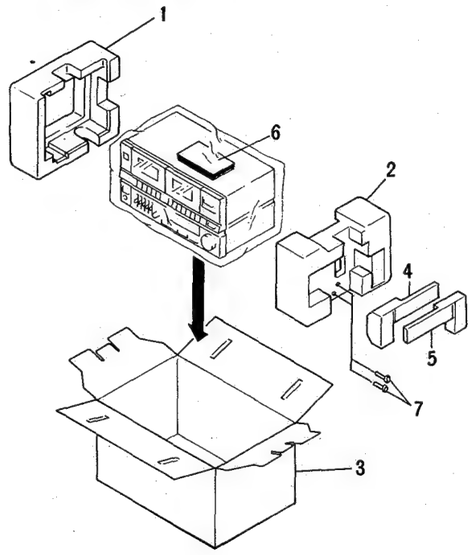
9. PACKING



Parts List

Mark	No.	Part No.	Description
	1	AHA1001	Side pad (L)
	2	AHA1002	Side pad (R)
	3	AHD1007 (Black type) AHD1054 (Silver type)	Packing case
	4	AMR1060 (Black type) AMR1062 (Silver type)	Player stand (L)
	5	AMR1061 (Black type) AMR1063	Player stand (R)
	6	ARB1001	Operating instruction (English)
	7	ABA1003	Screw

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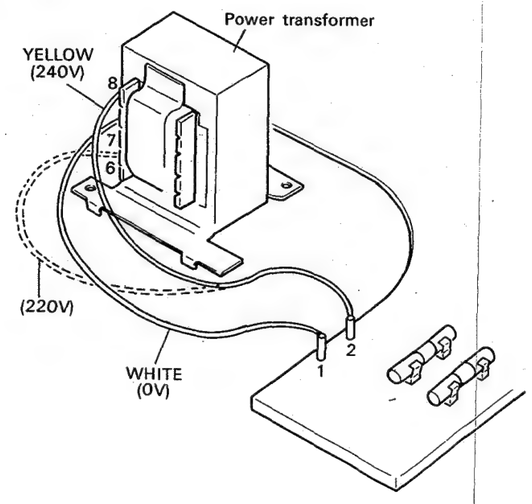


10. ADJUSTMENTS

10-1. TAPE SPEED ADJUSTMENT

1. Connect the frequency counter to TP1 and TP3(GND).
2. Mount the test tape STD-301 onto deck.
3. Put the deck into play mode and adjust the tape speed so that the playback signal frequency becomes 3010Hz±5Hz by inserting a screwdriver into the motor adjustment slot.

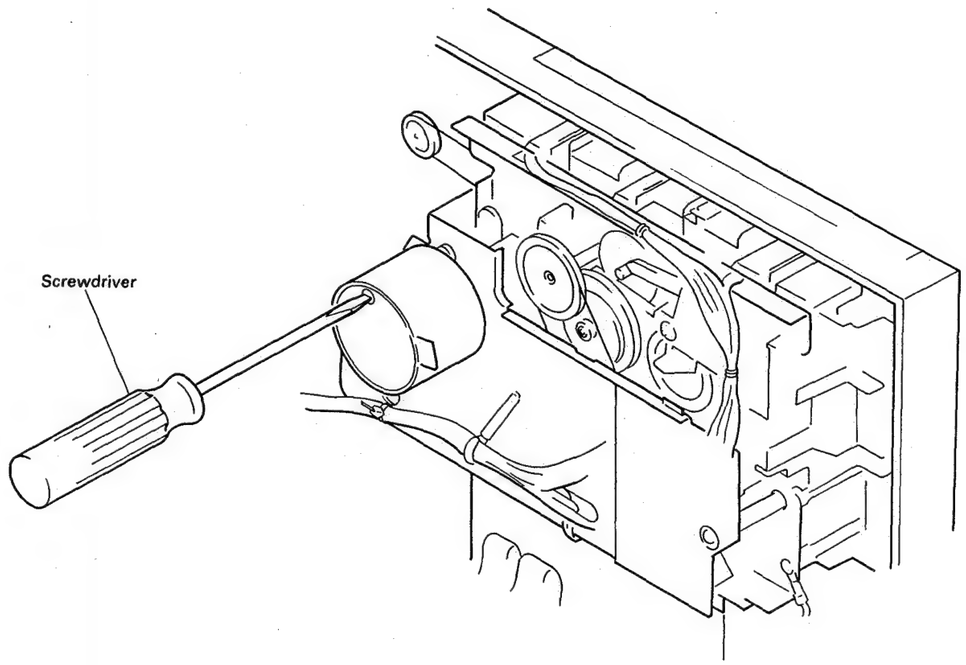


Fig. 10-1 Tape speed adjustment

10-2. ELECTRICAL ADJUSTMENTS

■ **Before commencing any electrical adjustments, make sure the following checked/completed.**

1. All mechanical adjustments must have been completed.
2. The heads must be clean and demagnetized.
3. 0 dBv = 1V during level measurements.
4. Use the specified tapes for each adjustment. Although test tapes have both A and B sides, only use side A where the label is attached.
   STD-331B: Playback adjustment
   STD-608A: NORMAL blank tape
   STD-620: CrO_2 blank tape
   STD-610: METAL blank tape
5. Prepare the following measuring equipment. AC millivoltmeter, audio generator, attenuator, oscilloscope.
6. Adjust both left and right channels unless otherwise specified.
7. And unless indicated otherwise, leave the DOLBY NR switch in the OFF position.
8. Let the set warm up for at least a few minutes before commencing adjustments. And before commencing the record/playback frequency response adjustent, let the set "age" for three to five minutes.
9. Always adjust the set in the given adjustments order. If the order is changed, proper adjustment will not be possible, and this may result in loss of performance.

Adjustment Procedure

1. Head azimuth adjustment
2. Playback level adjustment
3. Recording/Playback frequency response
4. Recording level adjustment

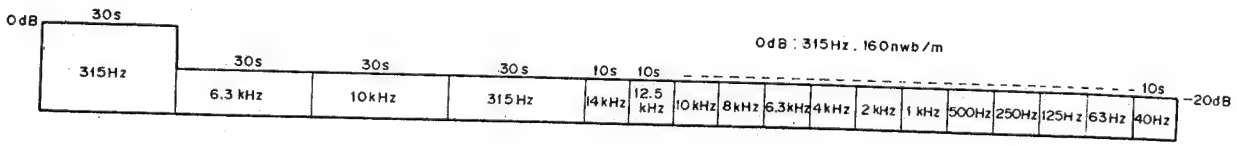


Fig. 10-2 Test tape STD-331B

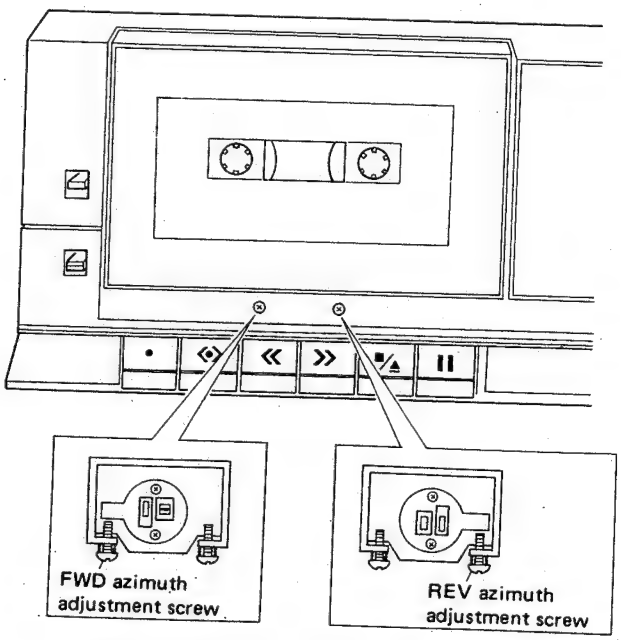


Fig. 10-3 Head azimuth adjustment

1. Head azimuth adjustment * (Note) Do not select FWD and REV with the screwdriver being kept inserted.

Procedure	Tape selector	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY(FWD)	Play back 10kHz/−20dB on test tape STD-331B	Head azimuth adjusting screw (Fig. 10-3)	TP1 (R) TP2 (L)	Maximum playback signal level	After completion, lock the screw
2		PLAY(REV)					

2. Playback level adjustment * Perform this adjustment precisely since this adjustment is Dolby level setting during playback.

Procedure	Tape selector	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	VR504 (R) VR503 (L)	TP1 (R) TP2 (L)	−13.5dBv±0.5dB	(TP3: GND)

3. Adjustment of recording and playback frequency characteristics * This adjustment is performed in order to adjust the recording bias. Therefore, caution should be exercised not to worsen the distortion ratio due to under bias.

Procedure	Tape selector	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	Mount the test tape STD-608A and put into REC mode.	———	Both sides of C701 (Fig. 10-4)	Confirm that the oscillation frequency is 105kHz±1kHz.	When it is not within the standard, put it into the standard by adjusting T701.
2	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP1 (R) TP2 (L)	−33.5dBv±0.5dB	
3	NORM	PEC/PLAY	Record and play back 315Hz and 10kHz on test tape STD-608A.	VR702 (R) VR701 (L)	TP1 (R) TP2 (L)	Repeat recording and playback, and compensate so that the playback level of 10kHz against 315Hz becomes 0±0.5dB.	

* Select the test tape, tape selector, and Dolby NR switch and satisfy the frequency characteristic zone as shown in Figs. 10-6.

4. Recording level adjustment * Set the graphic equalizer and balance volume to the center and the mike mixing volume to the source side.

Procedure	Tape selector	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP1 (R) TP2 (L)	−13.5dBv (±0.5dB)	
2	NORM	REC/PLAY	Record and play back 315Hz to the test tape STD-608A.	VR704 (R) VR703 (L)	TP1 (R) TP2 (L)	Repeat recording and playback, and compensate so that the playback level of 315Hz becomes −13.5dBv (±0.5dB)	
3	CrO_2	REC/PLAY	Record and play back 315Hz to the test tape STD-620.	———	TP1 (R) TP2 (L)	Confirm that the playback level of 315Hz becomes −13.5dBv (±1dB)	
4	METAL	REC/PLAY	Record and play back 315Hz to the test tape STD-610.	———	TP1 (R) TP2 (L)		

Note: * This deck is provided with an auto-tape-selector mechanism.

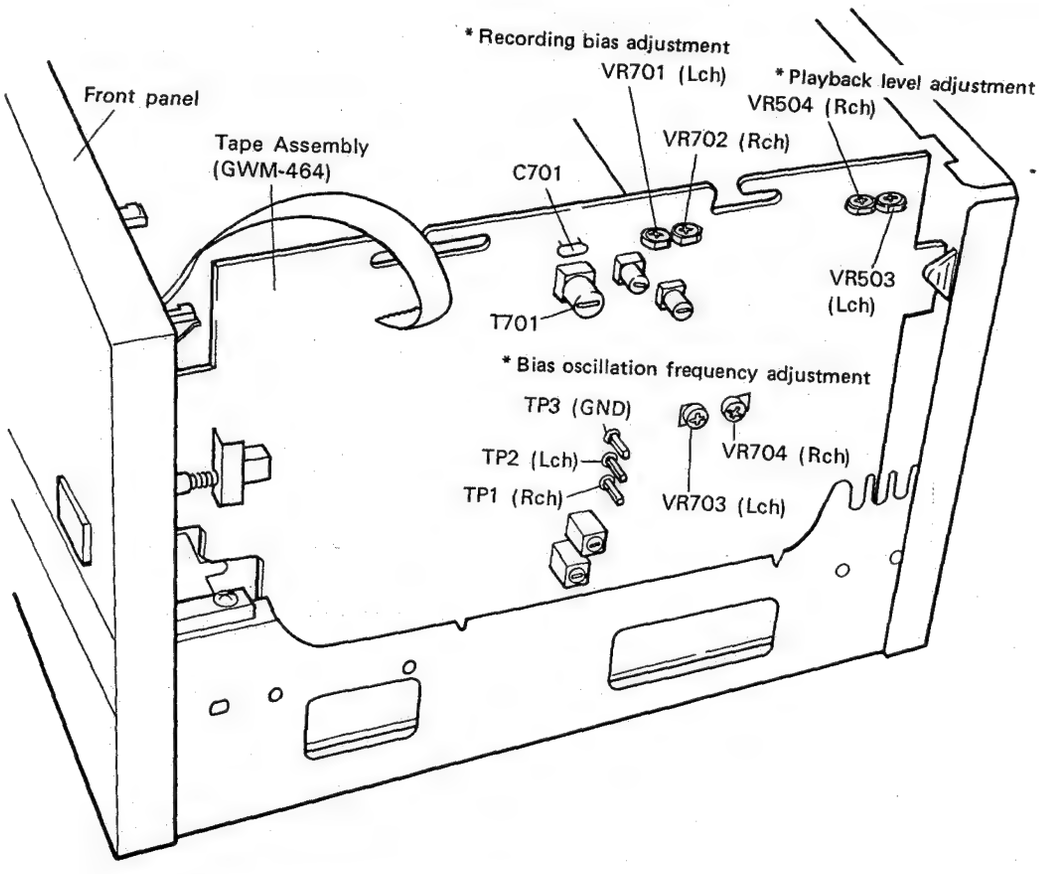


Fig. 10-4 Arrangement diagram of adjusting parts

Test tape	STD-331B
DOLBY NR switch position	OFF

- The right channel is corrected by −0.5 at 125 Hz and −1 dB at 63 Hz to compensate for edge effect.

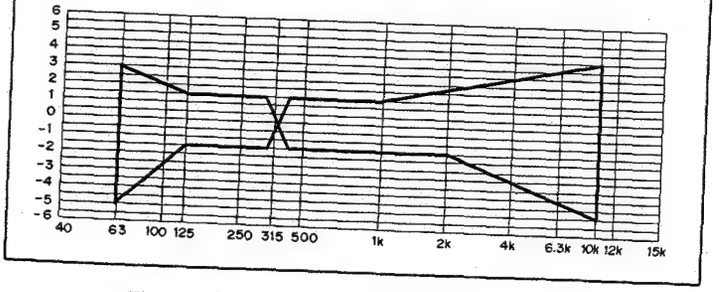


Fig. 10-5 Playback frequency response tolerance zone

Test tape	STD-608A	Test tape	STD-608A
DOLBY NR switch	OFF	DOLBY NR switch	ON

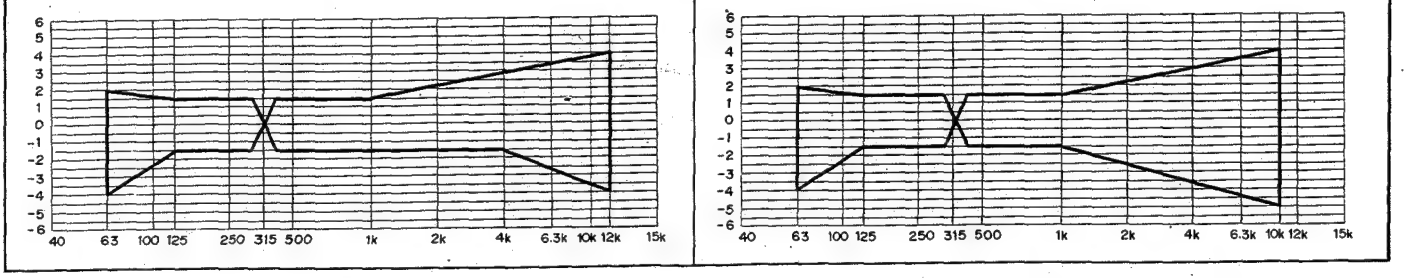


Fig. 10-6 Recording and playback frequency response tolerance zone (NORM)

Test tape	STD-610	Test tape	STD-610
DOLBY NR switch	OFF	DOLBY NR switch	ON

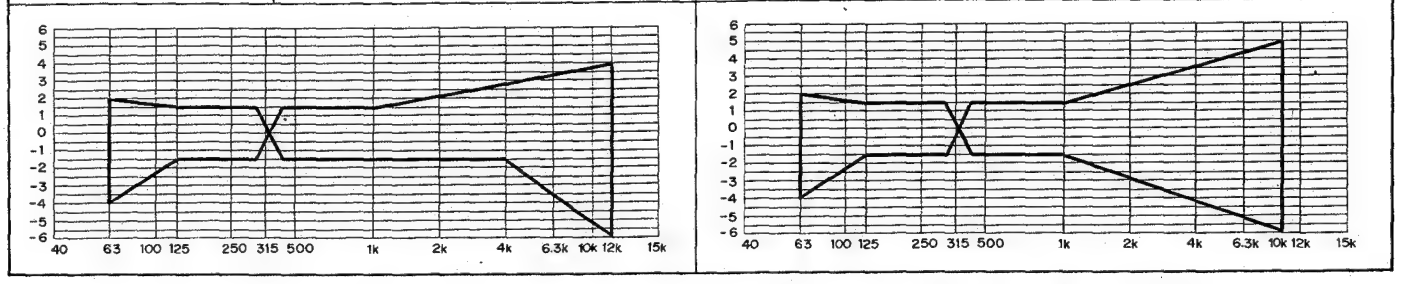


Fig. 10-7 Recording and playback frequency response tolerance zone (METAL)

Test tape	STD-620	Test tape	STD-620
DOLBY NR switch	OFF	DOLBY NR switch	OFF

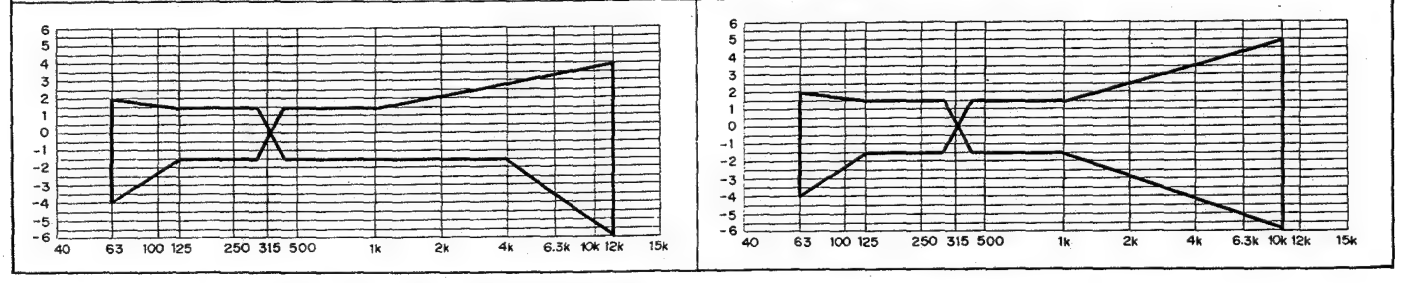


Fig. 10-8 Recording and playback frequency response tolerance zone (CrO_2)

10. RÉGLAGE

10-1. REGLAGE DE LA VITESSE DE LA BANDE

1. Raccorder le compteur de frequence a TP1 et TP3 (GND).
2. Installer la bande d'essai STD-301 sur la platine de lecture.
3. Mettre la platine en mode lecture et regler la vitesse de defilement pour que la fréquence du signal de lecture soit de 3010Hz±5Hz en inserant un tournevis dan l'encoche de reglage du moteur.

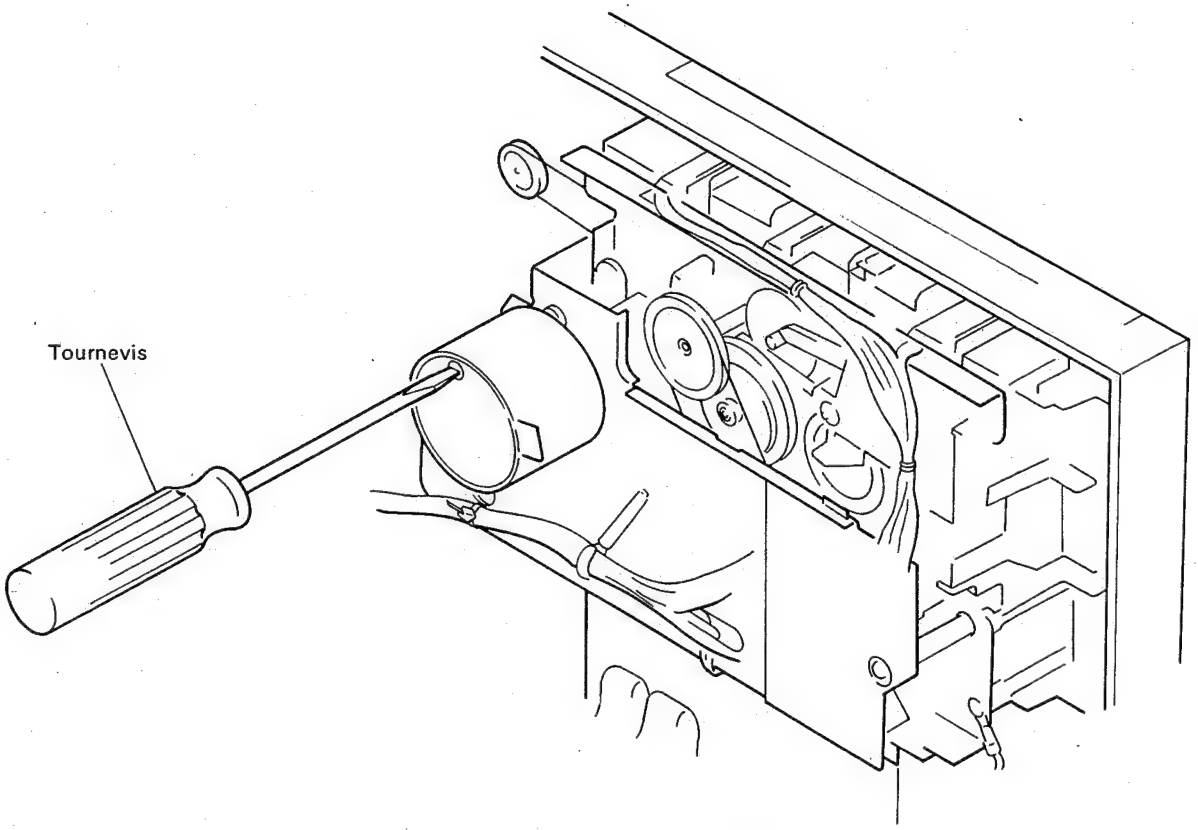


Fig. 10-1 Réglage de la vitesse de défilement

10-2. RÉGLAGES ÉLECTRIQUES

■ Avant de commencer à procéder aux réglages électriques, bien effectuer les vérifications suivantes.

1. Tous les réglages mécaniques ont été effectués.
2. Les têtes doivent être propres et démagnétisées.
3. 0 dBv = 1V pendant les mesures de niveau.
4. Utiliser les bandes spécifiées pour chaque réglage. Bien que les bandes d'essai aient à la fois une face A et une face B, n'utiliser que la face A sur laquelle est attachée l'étiquette.
   STD-331B: Réglage de la reproduction.
   STD-608A: Bande vierge ordinaire. (NORMAL)
   STD-620: Bande vierge à l'oxyde de chrome (CrO_2)
   STD-610: Bande vierge au métal (METAL)
5. Préparer les équipements e mesure ci-après: millivoltmètre CA, générateur audio, atténuateur, oscilloscope.
6. Régler à la fois le canal gauche et le canal droit, sauf spécification contraire.
7. Sauf spécification contraire, laisser le commutateur de réduction de bruit DOLBY en position arrêt (OFF).
8. Laisser l'appareil chauffer pendant au moins quelques minutes avant de commencer les réglages. Avant de commencer le réglage de la réponse en fréquences enregistrement/reproduction, laisser l'appareil fonctionner de trois à cinq minutes.
9. Toujours procéder aux réglages dans l'ordre indiqué. Si cet ordre est modifié, il ne sera plus possible d'effectuer des réglages correctement, et cela pourait entraîner une dégradation des performances.

Procédure de réglage

1. Réglage de l'azimutage de la tête.
2. Réglage du niveau de reproduction.
3. Réponse en fréquences enregistrement/reproduction.
4. Réglage du niveau d'enregistrement.

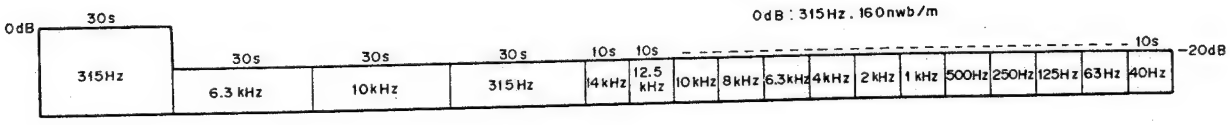


Fig. 10-2 Band d'essai STD-331B

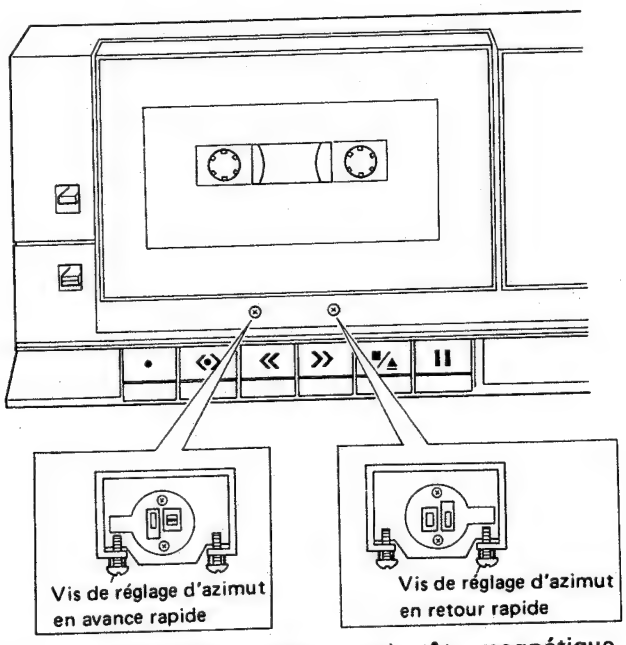


Fig. 10-3 Réglage dázimut de tête magnétique

1. Réglage d'azimut * (Note) Enlever le tournevis avant de régler sur marche avant ou retour en arrière.

Méthode	Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Point de réglage	Point de mesure	Valeur de réglage	Remarque
1	Normal	PLAY(FWD)	Lecture sur 10kHz/−20dB avec bande d'essai STD-331B	Vis de réglage d'azimut (Fig. 10-3)	TP1 (R) TP2 (L)	Niveau maximum du signal de lecture	Bloquer ensuite la vis
2		PLAY(REV)					

2. Réglage du niveau de lecture * Effectuer ce réglage avec précision car il détermine le niveau Dolby pendant la lecture.

Méthode	Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Point de réglage	Point de mesure	Valeur de réglage	Remarque
1	Normal	PLAY	Lecture sur 315Hz/0dB avec bande d'essai STD-331B	VR504 (R) VR503 (L)	TP1 (R) TP2 (L)	−13,5dBv±0,5dB	(TP3; GND)

3. Réglage des caractéristiques des fréquence d'enregistrement et de lecture * Ce réglage est effectué pour permettre l'adjustement de la polarisation d'enregistrement. Par conséquent, attention à ne pas perturber le taux de distorsion avec une sous-polarisation.

Méthode	Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Point de réglage	Point de mesure	Valeur de réglage	Remarque
1	Normal	REC	Mettre la bande d'essai STD-608A en place et régler le mode REC.	———	Deux côtés de C701 (Fig. 10-4)	Vérifier que la fréquence d'oscillation est de 105kHz±1kHz.	Si les cotes ne sont respectées, régler à l'aide de T701.
2	Normal	REC	Appliquer un signal de 315Hz à la borne de CD et brancher l'interrupteur de CD.	Niveau du signal d'entrée	TP1 (R) TP2 (L)	−33.5dBv±0.5dB	
3	Normal	REC	Enregistrer et lire 315 Hz et 10kHz sur la bande d'essai STD-608A.	VR702 (R) VR701 (L)	TP1 (R) TP2 (L)	Recommencer enregistrement et lecture et compenser pour amener le niveau d'enregistrement de 10kHz à 0±0.5dB par rapport aux 315Hz.	

* Choisir la bande d'essai, régler le sélecteur de bande, brancher l'interrupteur de réduction de bruit Dolby et obtenir la zone de caractéristique de fréquence comme illustré en Fig. 10-6

4. Réglage duniveau d'enregistrement * Régler le correcteur et le volume en position moyenne et le volume de mixage du micro sur côté source.

Méthode	Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Point de réglage	Point de mesure	Valeur de réglage	Remarque
1	Normal	REC	Appliquer un signal de 315Hz à la borne de CD et brancher l'interrupteur de CD.	Niveau du signal d'entrée	TP1 (R) TP2 (L)	−13,5dBv (±0,5dB)	
2	Normal	REC/PLAY	Enregistrer et lire 315 Hz sur la bande d'essai STD-608A.	VR704 (R) VR703 (L)	TP1 (R) TP2 (L)	Recommencer enregistrement et lecture et compenser pour amener le niveau d'enregistrement de315Hz à −13,5dBv(±0,5dB)	
3	CrO_2	REC/PLAY	Enregistrer et lire 315 Hz sur la bande d'essai STD-620.	———	TP1 (R) TP2 (L)	Vérifier que le niveau de lecture à 315Hz passe à −13,5dBv (±1dB)	
4	METAL	REC/PLAY	Enregistrer et lire 315 Hz sur la bande d'essai STD-610.	———	TP1 (R) TP2 (L)		

Note: * Cette platine est pourvue d'un mécanisme d'auto-sélection-de bande.

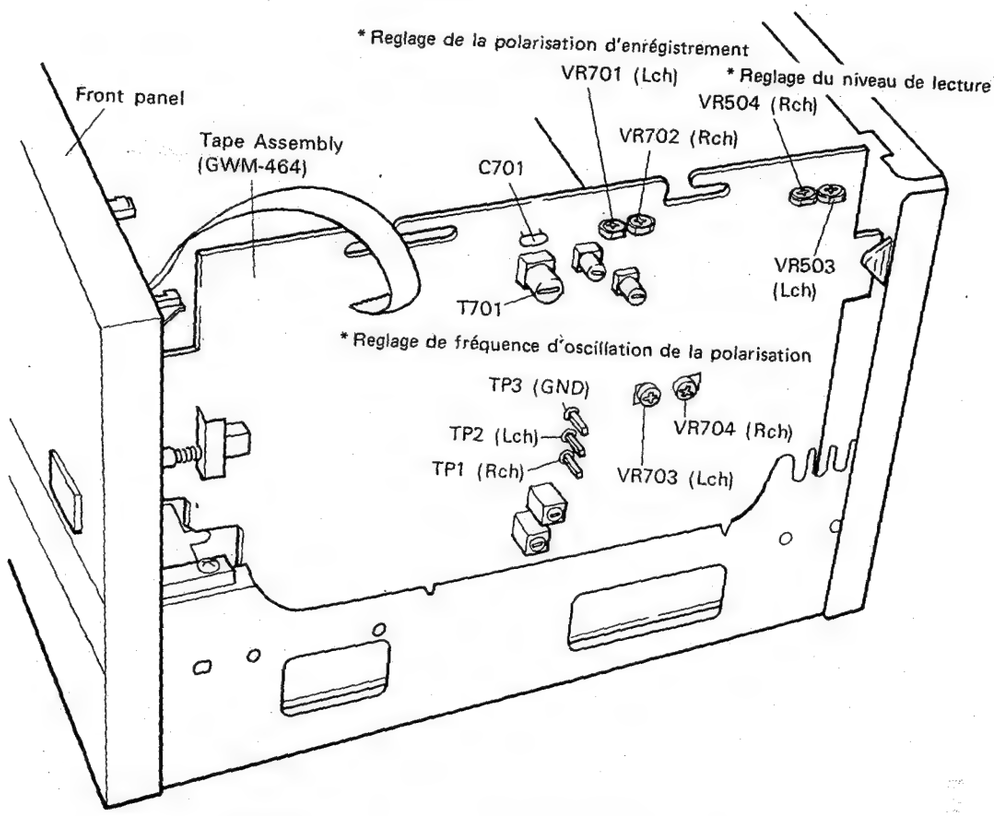


Fig. 10-4 Shéma de localisation des pièces de réglage

Bande déssai	STD-331B
Position du commutateur DOLBY NR	OFF

- Le canal de droite se corrige de −0.5 dB à 125 Hz, et de −1 dB à 63 dB afin de compenser l'effet de bordure.

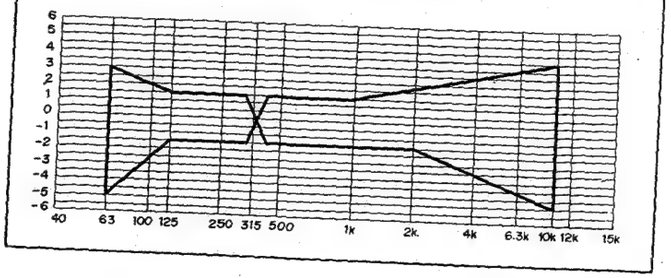


Fig. 10-5 Zone de tolérance de la réponse de fréquence de lecture

Bande d'essai	STD-608A	Bande d'essai	STD-608A
Commutateur DOLBY NR	OFF	Commutateur DOLBY NR	ON

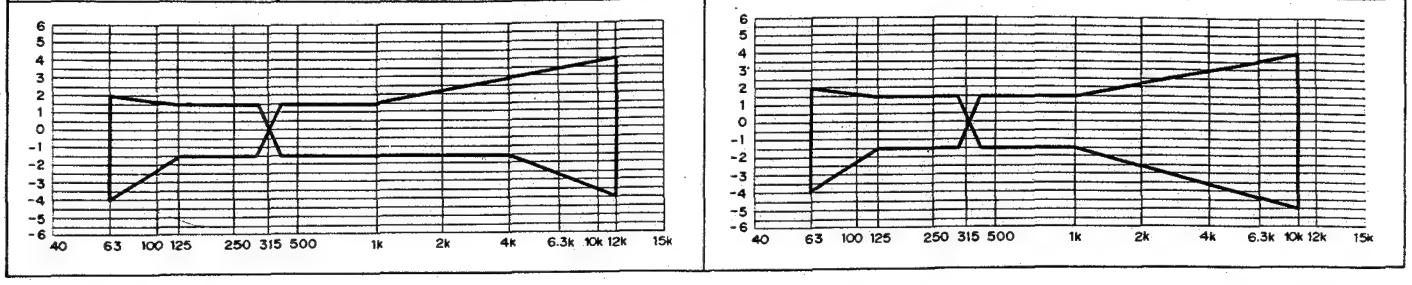


Fig. 10-6 Zone de tolérance de la réponse de fréquence d'enregistrement et de lecture (NORM)

Bande d'essai	STD-610	Bande d'essai	STD-610
Commutateur DOLBY NR	OFF	Commutateur DOLBY NR	ON

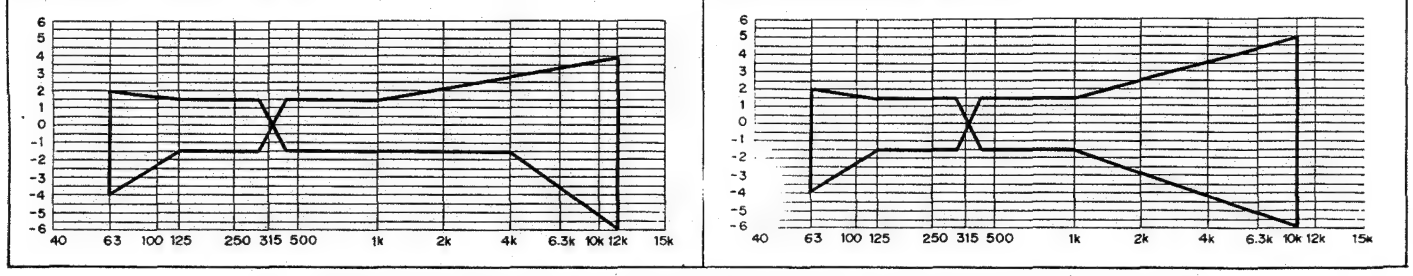


Fig. 10-7 Zone de tolérance de la réponse de fréquence d'enregistrement et de lecture (METAL)

Bande d'essai	STD-620	Bande d'essai	STD-620
Commutateur DOLBY NR	OFF	Commutateur DOLBY NR	OFF

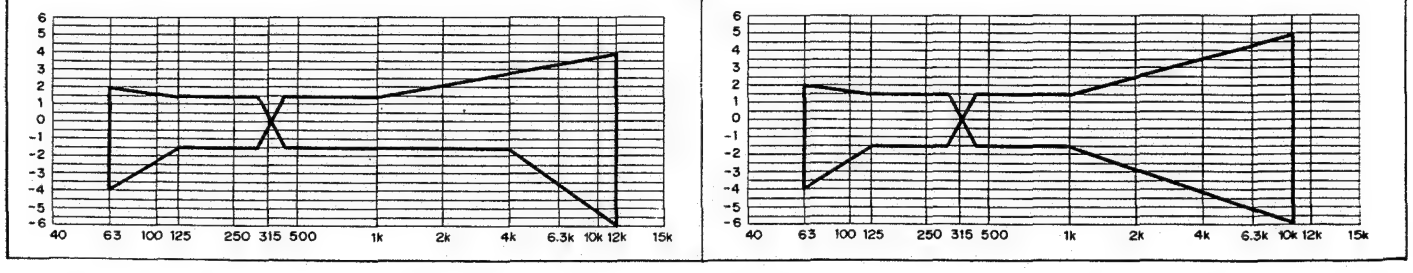


Fig. 10-8 Réponse de fréquence d'enregistrement et de lecture du mode de copiage (CrO_2)

10. AJUSTE

10-1. AJUSTE DE VELOCIDAD DE LA CINTA

1. Connecte el frecuencimetro a TP1 y TP3 (GND).
2. Monte la cinta de prueba STD-301 en el deck.
3. Ponga el deck en el mode de reproducción y adjuste la velocidad de la cinta insertando un destornillador en la ranura de ajuste del motor, de modo que la frecuencia de senal de reproducción llegue a ser 3010Hz±5Hz.

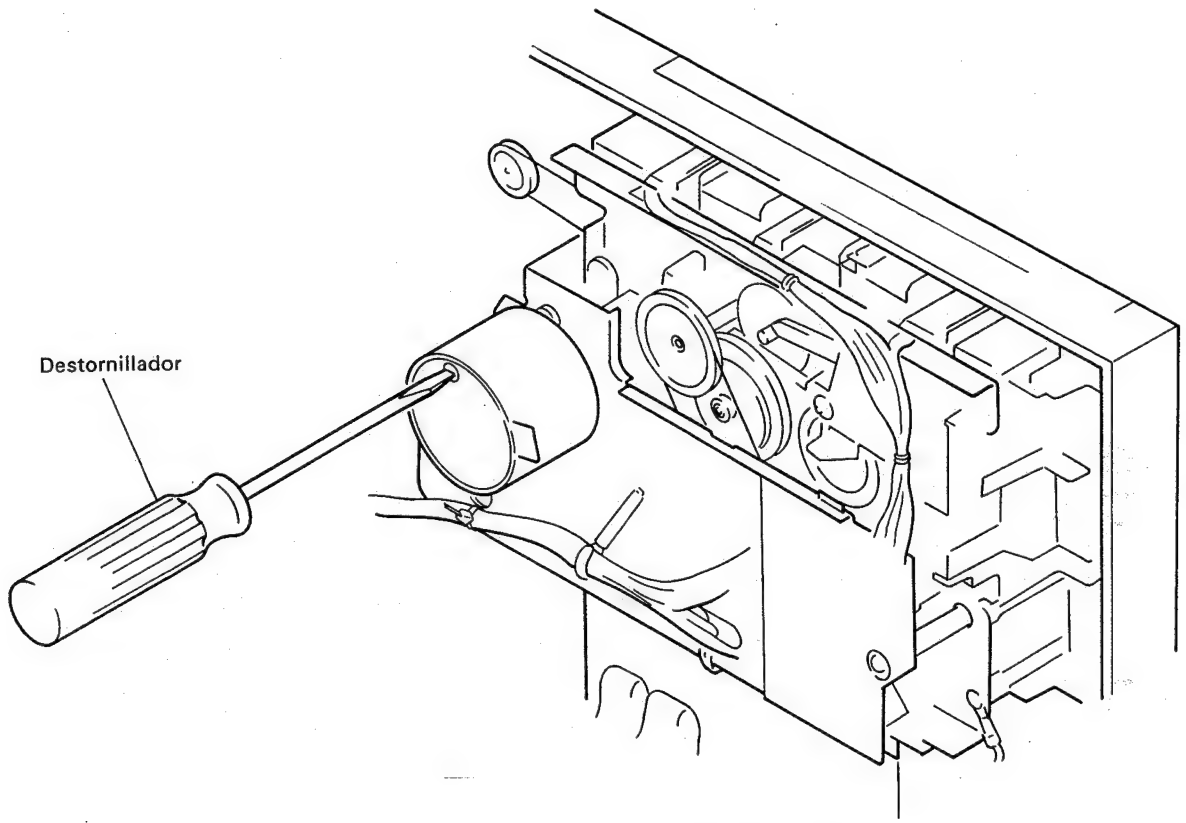


Fig. 10-1 Ajustamiento de la velocidad de cinta

10-2. ADJUSTES ELECTRICOS

■ Antes de iniciar cualquier ajuste, cerciorarse de haber completado y comprobado lo siguiente.

1. Deben haberse completo todos los ajustes mecánicos.
2. Las cabezas deben ester limpias y desmagnetizadas.
3. 0 dBv=1V durante las mediciones del nivel.
4. Emplear las cintas especificadas para cada ajuste. Aunque estas cintas están provistas de ambos lados, A y B, emplear sólo el lado A, donde está la etiqueta.
   STD-331B: Adjuste de reproducción.
   STD-608A: Cinta en blanco NORMAL.
   STD-620: Cinta en blanco de CrO_2.
   STD-610: Cinta en blanco de METAL.
5. Preparar el siguiente equipo de medición: Un voltimetro de CA, un generador de sonido, un atenuador y un osciloscopio.
6. Ajustar los canales izquierdo y derecho a menos que se especifique lo contrario.
7. Y a menos que se diga lo contrario, dejar el interruptor DOLBY NR en la posición OFF.
8. Dejar que se precaliente el aparato durante algunos minutos antes de iniciar los ajustes.
   Y antes de empezar el ajuste de la respuesta en frecuencia para reproducción y grabación, dejar que se precaliente de tres a cinco minutors.
9. Ajustar siempre el aparato en el orden de ajuste dado. Si se cambia el orden, no son posibles los ajustes adecuados, lo cual puede ocasionar pérdida del rendimiento.

Procedimientos de ajuste

1. Ajuste del acimut de la cabeza.
2. Ajuste del nivel de repoducción.
3. Respuesta en frecuencia de grabación/reproducción.
4. Ajuste del nivel de grabación.

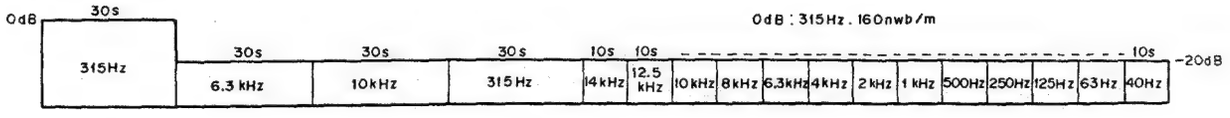


Fig. 10-2 Cinta de prueba STD-331B

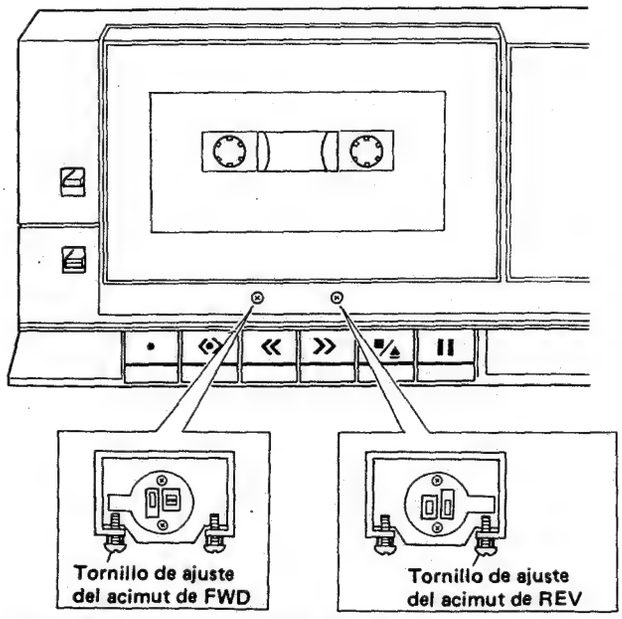


Fig. 10-3 Ajuste azimutal de la cabeza de grabación

1. Ajuste del acimut de la cabeza * (Nota) No seleccione el avance hacia delante o hacia atrás con el destornillador mantenido dentro.

Procedimiento	Selector de cinta	Modo	Señal de entrada/ cinta de prueba	Punta de ajuste	Punta de medición	Valor de ajuste	Observación
1	Normal	PLAY(FWD)	Reproducción de 10 kHz/ – 20 dB en la cinta de prueba STD-331B	Tornillo de ajuste del acimut de la cabeza (Fig. 10-3)	TP1 (R) TP2 (L)	Nivel máximo de señal de reproducción	Después de terminar, trabe el tornillo
2		PLAY(REV)					

2. Ajuste del nivel de reproducción * Ejecute este ajuste con exactitud, ya que el anterior es la fijación del nivel Dolby durante la reproducción.

Procedimiento	Selector de cinta	Modo	Señal de entrada/ cinta de prueba	Punta de ajuste	Punta de medición	Valor de ajuste	Observación
1	Normal	PLAY	Reproducción de 315Hz/ 0dB en la cinta de prueba STD-331B	VR504 (R) VR503 (L)	TP1 (R) TP2 (L)	−13,5dBv±0,5dB	(TP3: GND)

3. Ajuste de las características de la frequencia de reproducción y grabación. * Este ajuste se efectua para ajustar la polarización de grabación. Por eso, se deberá tener cuidado de no empeorar la relación de distorsión debido a una subpolarización.

Procedimiento	Selector de cinta	Modo	Señal de entrada/ cinta de prueba	Punta de ajuste	Punta de medición	Valor de ajuste	Observación
1	Normal	REC	Monte la cinta de prueba STD-608A y ponga el modo de REC.	———	Ambos lados de C701(Fig. 10-4)	Confirme que la frecuencia de oscilación sea 105 kHz ±1 kHz.	Cuando no está dentro del estándar, póngala en el estándar ajustando T701.
2	Normal	REC	Apique la señal de 315 Hz a la terminal de CD y conecte el interruptor de CD.	Nivel de señal de entrada	TP1 (R) TP2 (L)	−33,5dBv±0,5dB	
3	Normal	REC/PLAY	Grabe y reproduzca 315 Hz y 10 kHz en la cinta de prueba STD-608A.	VR702 (R) VR701 (L)	TP1 (R) TP2 (L)	Repita la grabación y la reproducción, y compense de modo que el nivel de reproducción de 10 kHz contra 315 Hz llegue a ser 0±0.5dB.	

* Seleccione la cinta de prueba, el selector de cinta y el interruptor de reducción de ruido y satisfaga la zona de característica de la frecuencia como se muestra en las Figuras 10-6.

4. Ajuste el nivel de grabación * Fije el ecualizador gráfico y el volumen de equilibrio al centro y el volumen de mezcla de micro al lado de la fuente.

Procedimiento	Selector de cinta	Modo	Señal de entrada/ cinta de prueba	Punta de ajuste	Punta de medición	Valor de ajuste	Observación
1	Normal	REC	Aplique la señal de 315 Hz a la terminal de CD y conecte el interruptor de CD.	Nivel de señal de entrada	TP1 (R) TP2 (L)	−13,5dBv (±0,5dB)	
2	Normal	REC/PLAY	Grabe y reproduzca 315 Hz en la cinta de prueba STD-608A.	VR704 (R) VR703 (L)	TP1 (R) TP2 (L)	Repita la grabación y la reproducción, y compence de modo que el nivel de reproducción de 315Hz llegue a ser −13,5dBv (±0,5dB)	
3	CrO_2	REC/PLAY	Grabe y reproduzca 315 Hz en la cinta de prueba STD-620.	———	TP1 (R) TP2 (L)	Confirme que el nivel de reproducción de 315 Hz llegue a ser −13,5dBv (±1 dB)	
4	METAL	REC/PLAY	Grabe y reproduzca 315 Hz en la cinta de prueba STD-610.	———	TP1 (R) TP2 (L)		

Nota: * Este deck está provisto con un mecanismo autoselector de cinta.

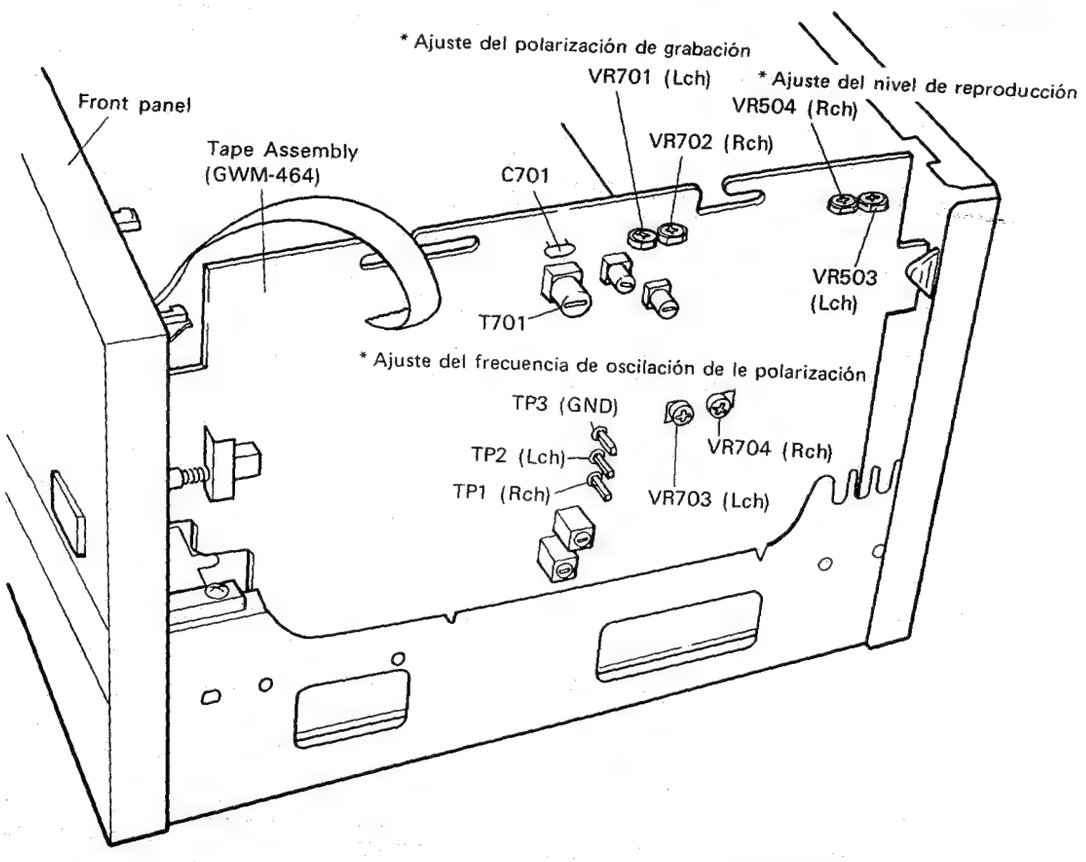


Fig. 10-4 Diagrama de disposición de las partes de ajuste

Cinta de prueba	STD-331B
Posición del interruptor DOLBY NR	OFF

- El canal derecho se corrige en −0,5 dB a 125 Hz y −1 dB a 63 Hz para compensar el efecto de los bordes.

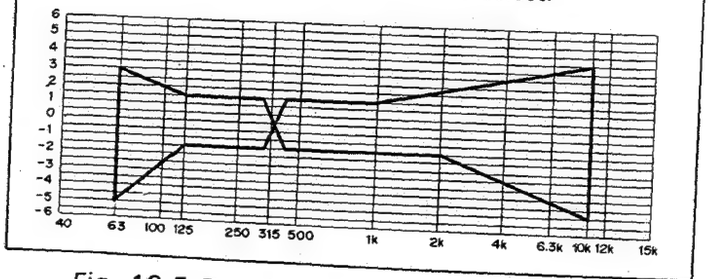


Fig. 10-5 Zona de tolerancia de respuesta de frecuencia de reproducción

Cinta de prueba	STD-608A	Cinta de prueba	STD-608A
Interruptor DOLBY NR	OFF	Interruptor DOLBY NR	ON

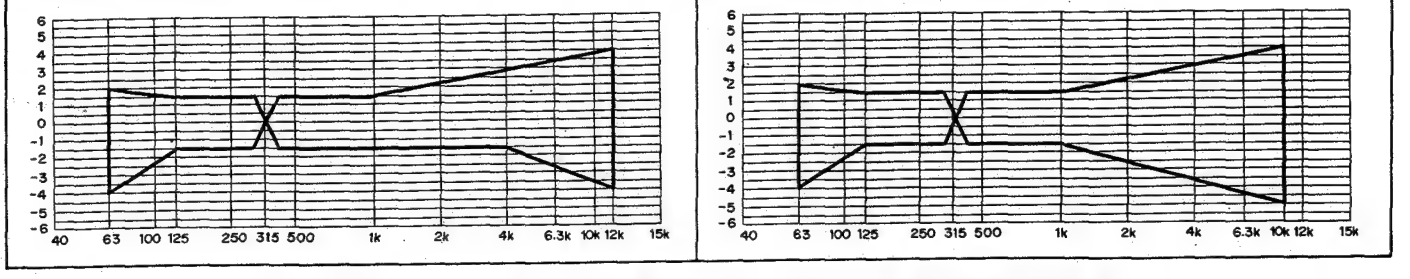


Fig. 10-6 Zona de tolerancia de copia y respuesta de frecuencia de reproducción (NORM)

Cinta de prueba	STD-610	Cinta de prueba	STD-610
Interruptor DOLBY NR	OFF	Interruptor DOLBY NR	ON

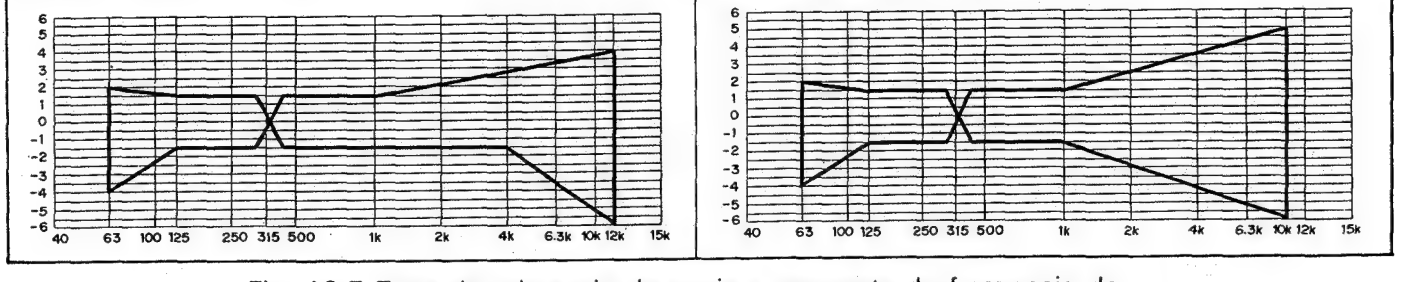


Fig. 10-7 Zona de tolerancia de copia y respuesta de frecuencia de reproducción (METAL)

Cinta de prueba	STD-620	Cinta de prueba	STD-620
Interruptor DOLBY NR	OFF	Interruptor DOLBY NR	OFF

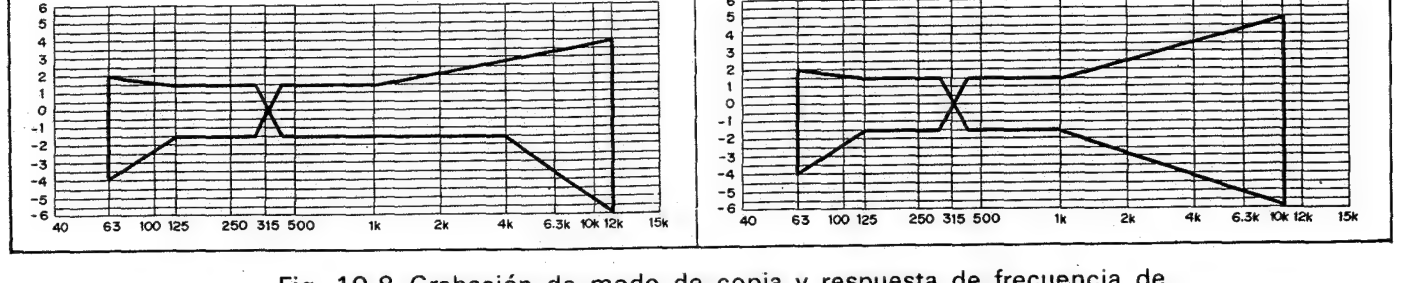


Fig. 10-8 Grabación de modo de copia y respuesta de frecuencia de reproducción (CrO_2)

11. FOR HE AND S TYPES

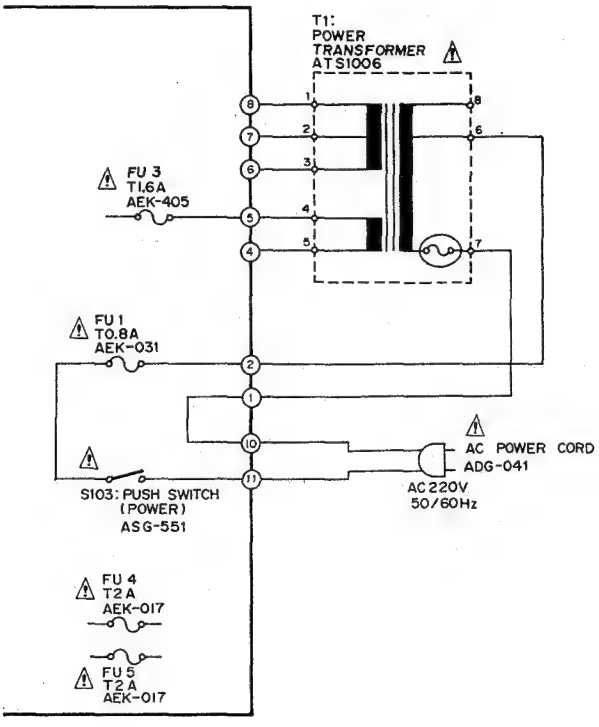
DC-X33Z(BK) HE and S types are the same as the DC-X33Z(BK) HB type except for following sections.

Contrast of Miscellaneous Parts

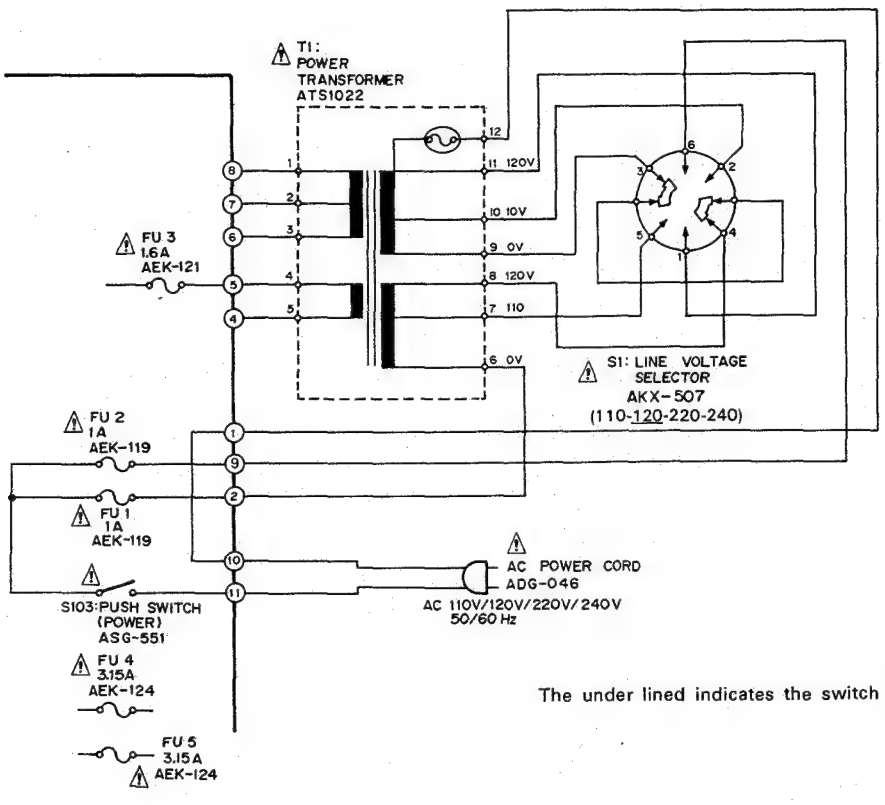
Mark	Symbol & Descriptions	Part No.				
		DC-X33Z(BK) HB type	DC-X33Z HB type	DC-X33Z(BK) HE type	DC-X33Z HE type	DC-X33Z(BK) S type
⚠ ★	T1 Power transformer					
	(220V/240V)	ATS1006	ATS1006	ATS1006	ATS1006	.....
	(110V/120V/220V/240V)	.....	.....	.....	.....	ATS1022
⚠	R Resistor (2.2MΩ, 1.2W)	.....	.....	.....	.....	.....
⚠ ★★	FU1 Fuse (T1.25A)	AEK-508	AEK-508	AEK-031	AEK-031	.....
⚠ ★★	FU1, FU2 Fuse (1A)	.....	.....	.....	.....	AEK-119
⚠ ★★	FU3 Fuse (T1.6A)	AEK-510	AEK-510	AEK-405	AEK-405	.....
	(1.6A)	.....	.....	.....	.....	AEK-121
⚠ ★★	FU4, FU5 Fuse (T2.5A)	AEK-511	AEK-511	AEK-017	AEK-017	.....
	(3.15A)	.....	.....	.....	.....	AEK-124
⚠ ★★	S1 Line voltage selector	.....	.....	.....	.....	AKX-507
	Knob (POWER)	AAD1003	AAD1029	AAD1003	AAD1029	AAD1003
	Knob (STEREO WIDE, TUNER, CD, PHONO, TAPE)	AAD1004	AAD1030	AAD1004	AAD1030	AAD1004
	Knob (DOLBY NR OFF-ON)	AAD1005	AAD1031	AAD1005	AAD1031	AAD1005
	Bonnet case	ANE1002	ANE1031	ANE1002	ANE1031	ANE1002
	Knob A (PLAY)	AAE1001	AAE1018	AAE1001	AAE1018	AAE1001
	Knob B (FAST)	AAE1002	AAE1019	AAE1002	AAE1019	AAE1002
	Knob C (FAST)	AAE1003	AAE1020	AAE1003	AAE1020	AAE1003
	Knob E (PAUSE)	AAE1027	AAE1028	AAE1027	AAE1028	AAE1027
	Volume base	AAK1001	AAE1065	AAK1001	AAK1065	AAK1001
	Knob F (REC)	AAE1006	AAE1023	AAE1006	AAE1023	AAE1006
	Knob (VOLUME)	AAE1010	AAE1025	AAE1010	AAE1025	AAE1010
	Deck panel (A)	AAK1013	AAK1073	AAK1013	AAK1073	AAK1013
	Front panel	AMB1009	AMB1051	AMB1009	AMB1051	AMB1009
	Operating instructions					
	(English)	ARB1001	ARB1001	.....	.....	ARB1001
	(English/German/French/Italian)	.....	.....	ARE1010	ARE1010	.....
	(Spanish)	.....	.....	.....	.....	ARC1004
⚠	Strain relief	AEC-882	AEC-882	AEC-882	AEC-882	AEC-829
⚠	AC Power cord	ADG-051	ADG-051	ADG-041	ADG-041	ADG-046
	Packing case	AHD1007	AHD1054	AHD1007	AHD1054	AHD1007
	Player stand (L)	AMR1060	AMR1004	AMR1060	AMR1062	AMR1060
	Player stand (R)	AMR1061	AMR1005	AMR1061	AMR1063	AMR1061
	Knob D (STOP/EJECT)	AAE1004	AAE1021	AAE1004	AAE1021	AAE1004

Circuit Diagram

For HE type



For S type



The under lined indicates the switch position.

ADDITIONAL

Service Manual

PIONEER

ORDER NO.
ARP1181-A

STEREO CASSETTE TAPE DECK AMPLIFIER

DC-X33Z(BK) HEZ, YP

- For servicing these types, please refer to the DC-X33Z(BK) service manual (ARP1120) with the exception of this additional service manual.

- This additional service manual is applicable to the HEZ and YP types.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A. TEL: (213) 420-5700
PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1,2740 Beveren. Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: (03) 580-9911

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

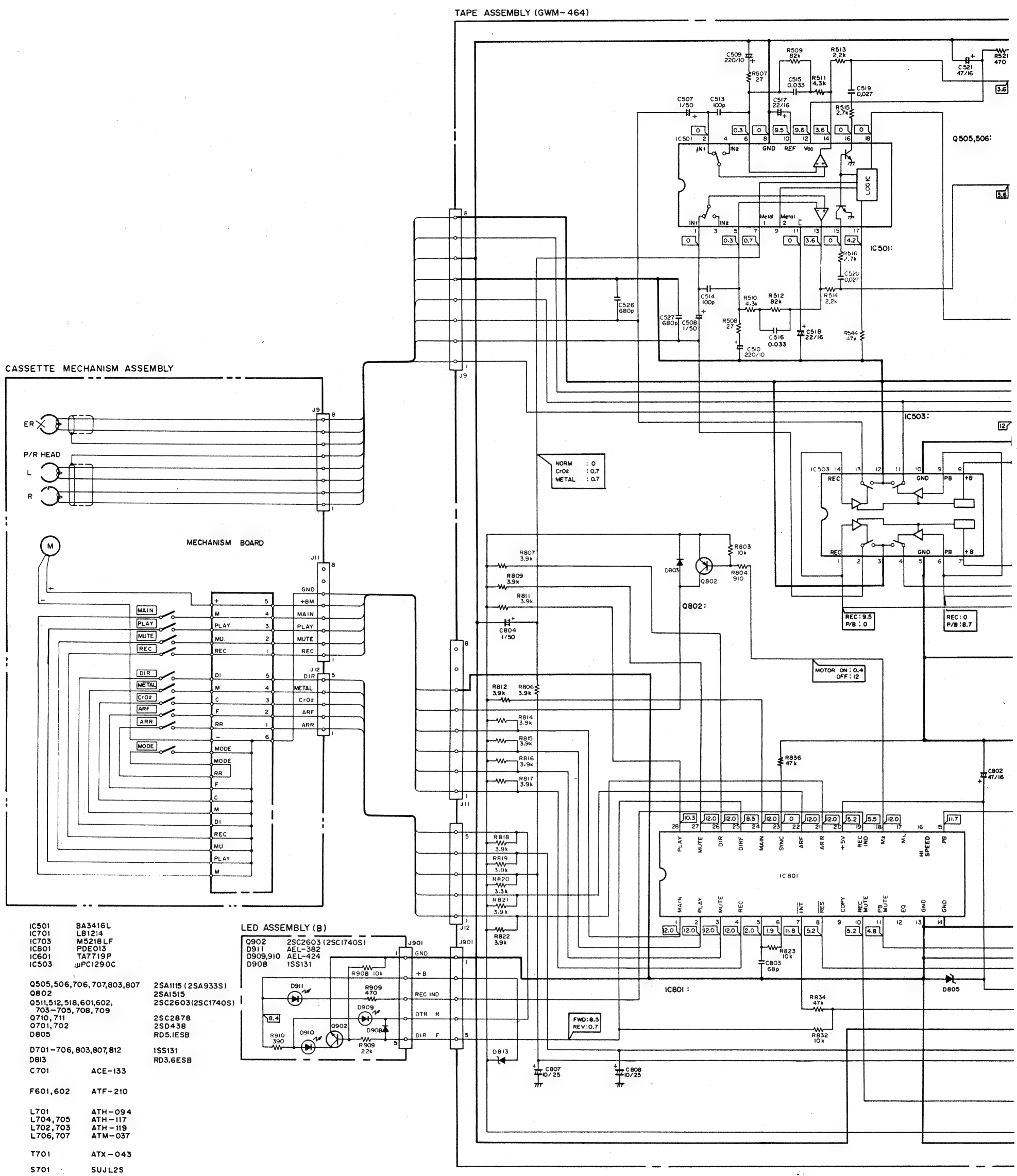
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

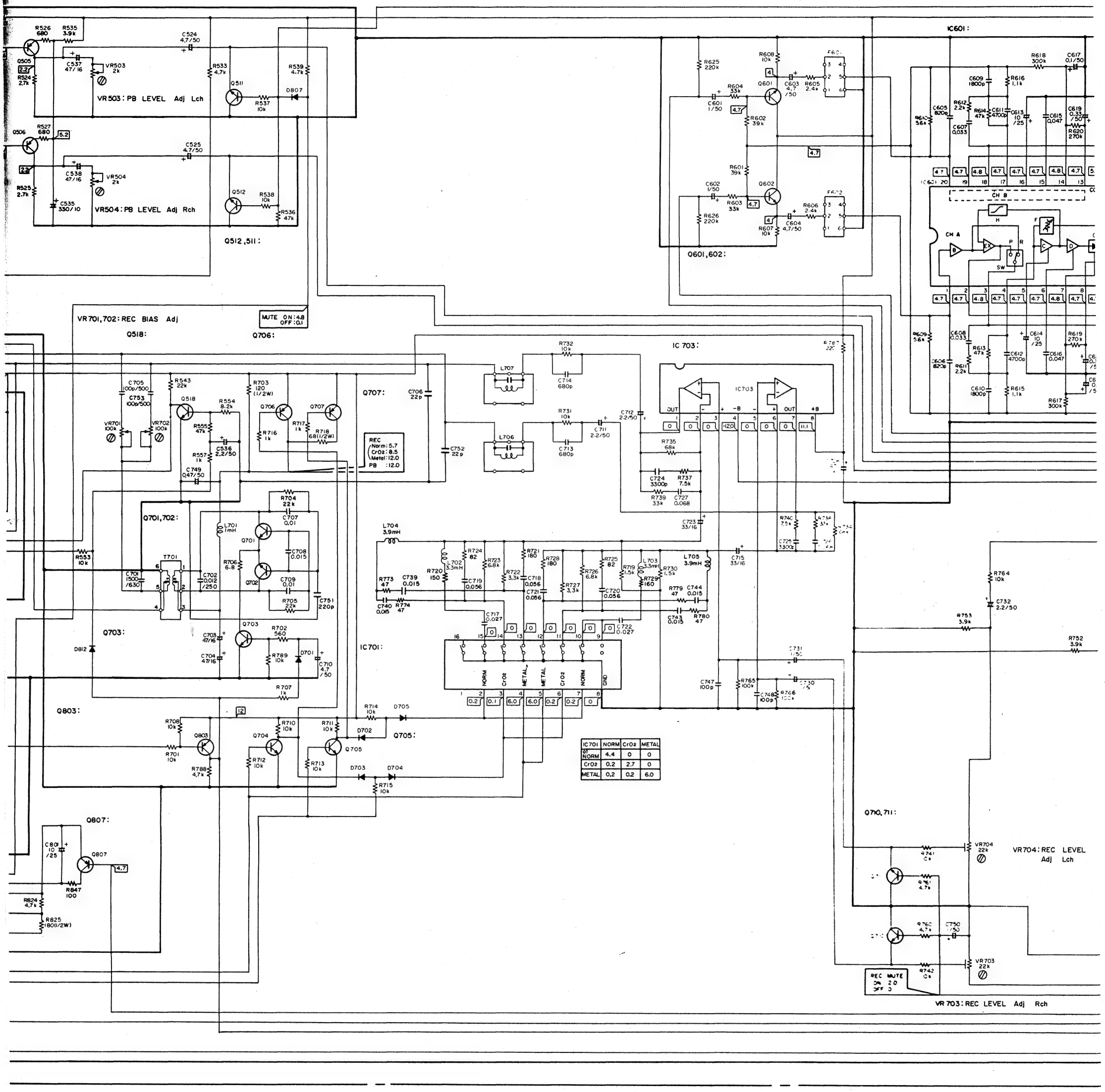
THE DC-X33Z(BK)/HEZ and YP types are the same as the DC-X33Z(BK)/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		DC-X33Z(BK) HB type	DC-X33Z(BK) HEZ type	DC-X33Z(BK) YP type	
	AF Assembly	GWM-467	GWM-469	GWM-467	
	EQ Assembly	Non supply	Non supply	Non supply	
	MIC Assembly	Non supply	Non supply	Non supply	
⚠	AC power cord	ADG-051	ADG-097	ADG-043	
⚠ ★★	FU1 Fuse (T0.8A)	AEK-507	AEK-031	AEK-031	
⚠ ★★	FU3 Fuse (T1.6A)	AEK-510	AEK-405	AEK-405	
⚠ ★★	FU4, 5 Fuse (T2A)	AEK-511	AEK-017	AEK-017	
	Operating instructions (English)	ARB1001	.....	ARB1001	
	(German)	.....	ARC1011	.....	

2. SCHEMATIC DIAGRAM

- **For HEZ type**




R526 680
R535 3.9k
C524 4.7/50
Q505
C537 47/16
VR503 2k
R524 2.7k
R533 4.7k
Q511
R539 4.7k
D807
R537 10k
VR503 : PB LEVEL Adj Lch
Q506
R527 680
C525 4.7/50
C538 47/16
VR504 2k
R525 2.7k
C535 330/10
VR504 : PB LEVEL Adj Rch
Q512
R538 10k
R536 47k
Q512,511 :
R625 220k
R608 10k
Q601
C603 4.7/50
R605 2.4k
R604 33k
C601 1/50
R602 39k
R601 39k
C602 1/50
Q602
R603 33k
R626 220k
R606 2.4k
R607 10k
C604 4.7/50
Q601,602 :
IC601 :
R618 300k
C617 0.1/50
C609 1800p
R616 1.1k
C605 820p
R612 2.2k
R614 47k
C611 4700p
C613 10/25
C615 0.047
C619 0.33/50
R620 270k
C607 0.033
R609 5.6k
CH B
CH A
SW
C608 0.033
C606 820p
R613 47k
C612 4700p
C616 0.047
R611 2.2k
C610 1800p
R615 1.1k
C614 10/25
R619 270k
R617 300k
VR701,702 : REC BIAS Adj
MUTE ON : 4.8
OFF : 0.1
Q518 :
Q706 :
Q707 :
C705 100p/500
C753 100p/500
R543 22k
R554 8.2k
R555 47k
R557 1k
C536 2.2/50
C749 Q47/50
VR701 100k
VR702 100k
R703 120 (1/2W)
Q706
Q707
R716 1k
R717 1k
R718 68(1/2W)
C706 22p
C752 22p
REC
Norm : 5.7
CrO2 : 8.5
Metal : 12.0
PB : 12.0
IC 703 :
L707
L706
R732 10k
C714 680p
R731 10k
C713 680p
C711 2.2/50
C712 2.2/50
IC703
OUT
-B
+B
R735 68k
C724 3300p
R737 7.5k
R739 33k
C727 0.068
R787 220
R740 7.5k
C725 3300p
C723 33/16
C715 33/16
Q701,702 :
R704 22k
C707 0.01
L701 1mH
Q701
C708 0.015
R706 6.8
Q702
C709 0.01
R705 22k
R553 10k
T701
C701 1500/630
C702 0.012/250
C751 220p
L704 3.9mH
L702 3.3mH
R720 150
R724 82
R723 6.8k
C719 0.056
R722 3.3k
C718 0.056
C721 0.056
R721 180
R728 180
R727 3.3k
R726 6.8k
C720 0.056
R725 82
R719 1.5k
L703 3.3mH
R729 160
R730 1.5k
L705 3.9mH
R773 47
C739 0.015
C740 0.015
R774 47
R779 47
C744 0.015
C743 0.015
R780 47
C717 0.027
C722 0.027
IC701 :
NORM
CrO2
METAL
METAL
CrO2
NORM
GND
Q703 :
C703 47/16
R702 560
C704 47/16
R789 10k
D701
C710 4.7/50
D812
R707 1k
R764 10k
C732 2.2/50
R753 3.9k
R752 3.9k
C731 1/50
C747 100p
R765 100k
C748 100p
R766 100k
C730 1/50
Q803 :
R708 10k
R710 10k
R711 10k
R714 10k
D705
D702
Q705 :
Q803
Q704
Q705
R701 10k
R712 10k
R713 10k
R788 4.7k
D703
D704
R715 10k
IC701
NORM
CrO2
METAL
NORM 4.4 0 0
CrO2 0.2 2.7 0
METAL 0.2 0.2 6.0
Q807 :
C801 10/25
Q807
R847 100
R824 4.7k
R825 180(1/2W)
Q710,711 :
VR704 22k
R741 0
R761 4.7k
R760 4.7k
C750 1/50
R762 4.7k
R742 0
VR703 22k
REC MUTE
ON 2.0
OFF 0
VR704 : REC LEVEL Adj Lch
VR703 : REC LEVEL Adj Rch

EQ ASSEMBLY

AF ASSEMBLY (GWM-469)

IC301, 302:

IC101:

IC102:

Q101,102:

Q103,104,108,107:

Q401:

Q105,108:

IC401:

PHONO

CD

VIDEO

TUNER

TAPE

Q704: REC LEVEL
Adj Lch

Rch

REC MUTE
ON :5.2
OFF:0.1

S701-2
DOLBY

ON-OFF

Q708,709:
DOLBY OFF: 5.3
DOLBY ON
P/B :0.5
REC :11.9

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

1. RESISTORS:
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.
2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
V; Signal voltage at 32 W + 32 W, 8Ω output (1 kHz).
; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
⇦ mA; DC current at no input signal.

4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts unmbers.
The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5 SWITCHES:
THE UNDERLINED INDICATES THE SWITCH POSITION

TAPE ASSEMBLY

S701,2 NOISE REDUCTION	ON <u>OFF</u>

AF ASSEMBLY

S101-1 FUNCTION PHONO	<u>ON</u> - OFF
S101-2 FUNCTION CD	ON - <u>OFF</u>
S101-3 FUNCTION VIDEO	ON - <u>OFF</u>
S101-4 FUNCTION TUNER	ON - <u>OFF</u>
S101-5 FUNCTION TAPE	ON - <u>OFF</u>
S102 SURROUND STEREO WIDE	ON - <u>OFF</u>
S103 POWER	ON - <u>OFF</u>

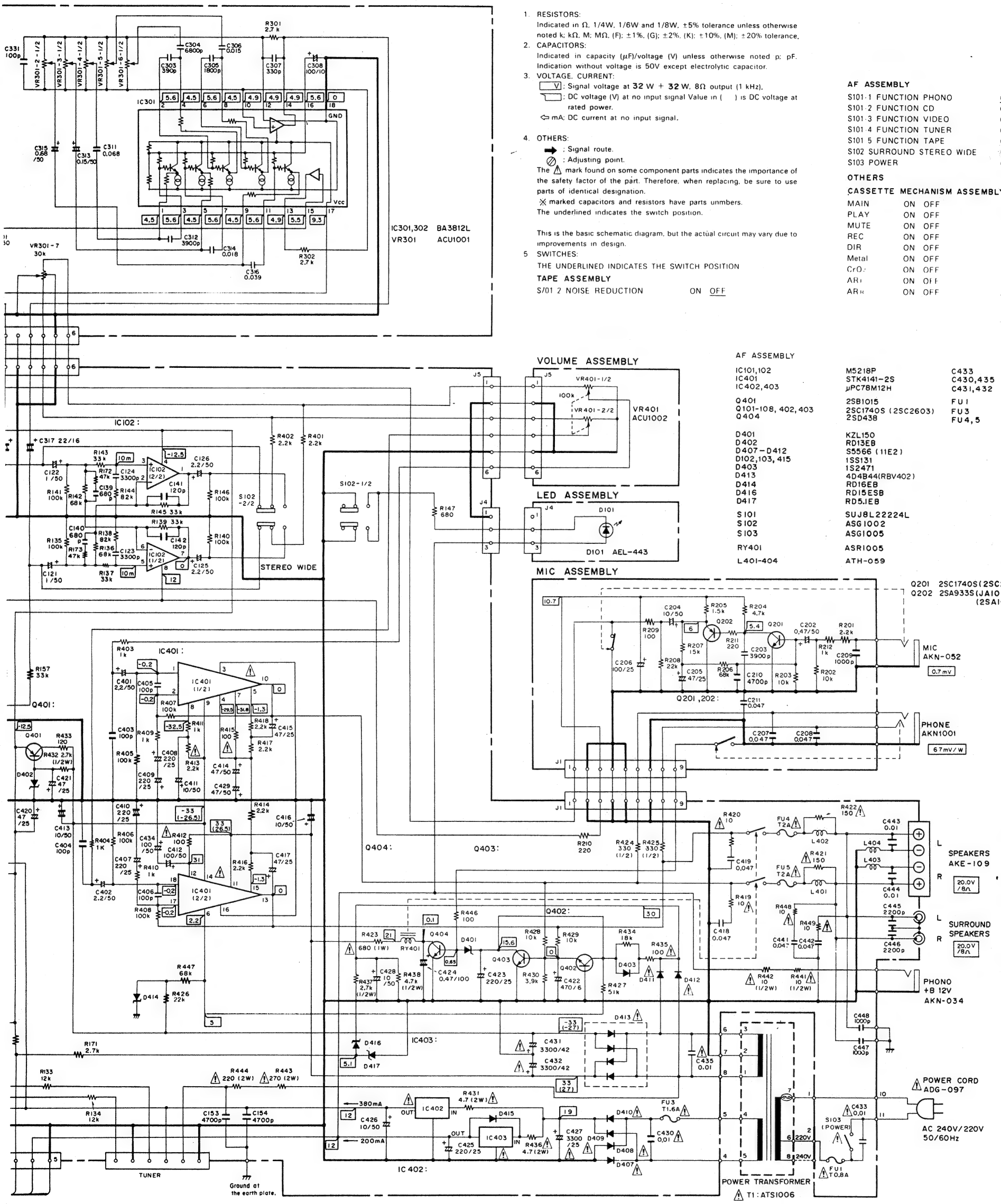
OTHERS

CASSETTE MECHANISM ASSEMBLY

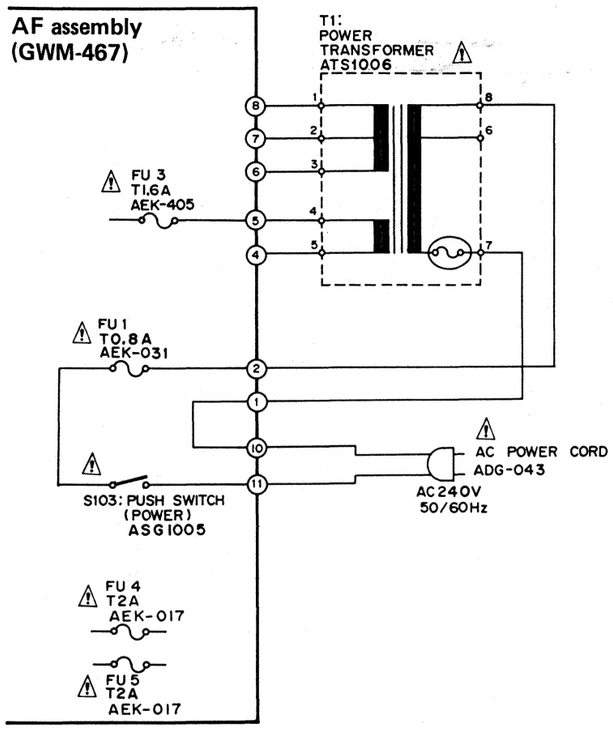
MAIN	ON	OFF
PLAY	ON	OFF
MUTE	ON	OFF
REC	ON	OFF
DIR	ON	OFF
Metal	ON	OFF
CrO2	ON	OFF
AR1	ON	OFF
AR2	ON	OFF

AF ASSEMBLY

IC101,102	M5218P	C433	ACG1002
IC401	STK4141-2S	C430,435	ACG-190
IC402,403	μPC78M12H	C431,432	ACH-249
Q401	2SB1015	FU1	AEK-031
Q101-108, 402, 403	2SC1740S (2SC2603)	FU3	AEK-405
Q404	2SD438	FU4,5	AEK-017
D401	KZL150		
D402	RD13EB		
D407-D412	S5566 (11E2)		
D102,103, 415	1SS131		
D403	1S2471		
D413	4D4B44(RBV402)		
D414	RD16EB		
D416	RD15ESB		
D417	RD5.1EB		
S101	SUJ8L22224L		
S102	ASG1002		
S103	ASG1005		
RY401	ASR1005		
L401-404	ATH-059		

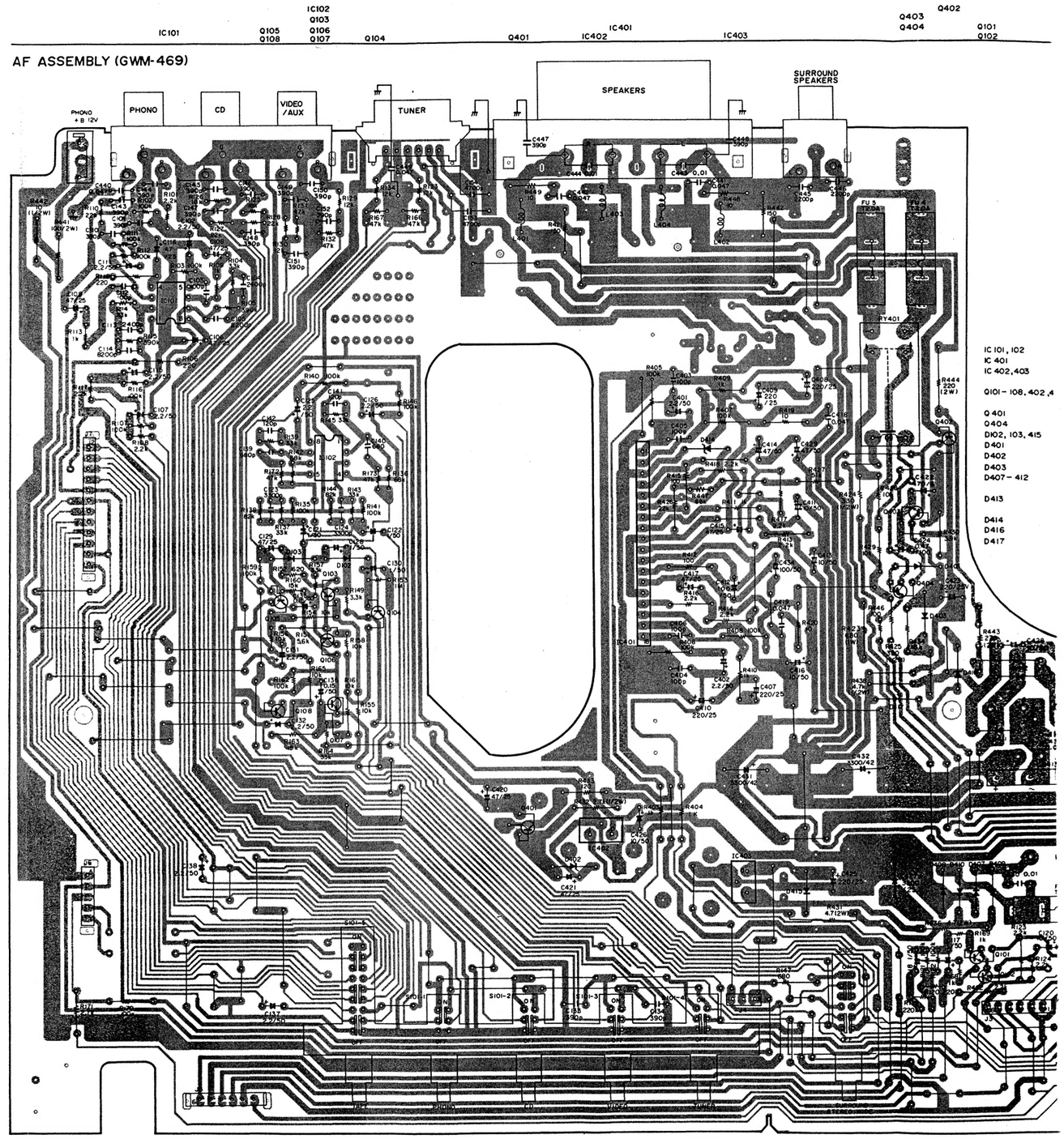


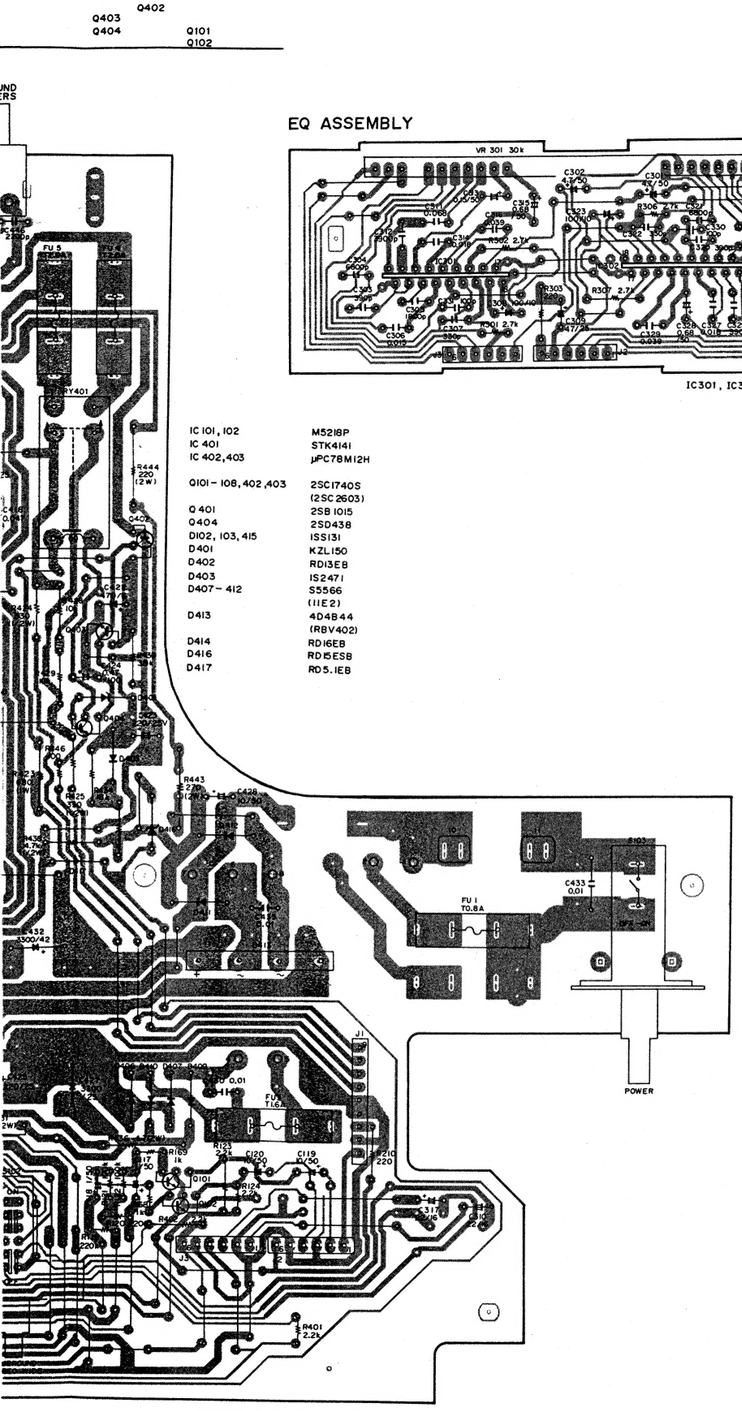
- For YP type



3. P.C. BOARDS PATTERNS

- For HEZ type

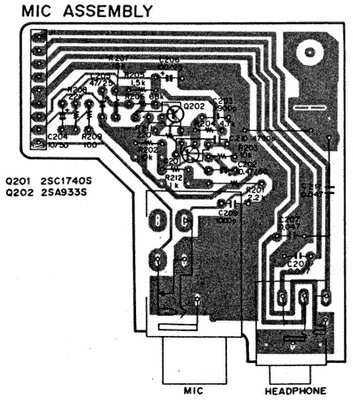




EQ ASSEMBLY

IC 101, 102	M5218P
IC 401	STK4141
IC 402, 403	μPC78M12H
Q101 – 108, 402, 403	2SC1740S (2SC2603)
Q 401	2SB 1015
Q 404	2SD438
D102, 103, 415	1SS131
D401	KZL150
D402	RD13EB
D403	1S2471
D407 – 412	S5566 (11E2)
D413	4D4B44 (RBV402)
D414	RD16EB
D416	RD15ESB
D417	RD5.1EB

MIC ASSEMBLY



4. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective-digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*	*.....*	*RN2H 0 R 5 K*
1Ω	*010*	*.....*	*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery-time may be longer than usual or they may be unavailable.*

AF Assembly (GWM-469) (HEZ type only)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101, IC102 OP-AMP IC	M5218P
⚠ ★★	IC401 AUDIO IC	STK4141-2S
⚠ ★★	IC402, IC403 REGURATOR IC	μPC78M12H
★★	Q401	2SB1015
★★	Q101—Q108, Q402, Q403	2SC1740S (2SC2603)
★★	Q404	2SD438
★	D401	KZL150
★	D402	RD13EB
⚠ ★	D407—D412	S5566 (11E2)
★	D417	RD5.1EB
★	D414	RD16EB
★	D102, D103, D415	1SS131
★	D403	1S2471
⚠ ★	D413	4D4B44 (RBV402)
★	D416	RD15ESB

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
⚠ ★★	S103 Push switch (POWER)	ASG1005
★★	S102 Push switch (STEREO WIDE)	ASG1002
★★	S101 Push switch (PHONO, CD, VIDEO, TUNER, TAPE)	SUJ8L22224L
★★	RY401 Relay (PROTECTION)	ASR1005

COILS

Mark	Symbol & Description	Part No.
	L401-L404 AF Choke coil	ATH-059

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C433 (0.01μF/AC400V)	ACG1002
⚠	C430, C435 (0.01 μF/150V)	ACG-019
⚠	C431, C432 (3300μF/42V)	ACH-249
	C103, C403, C404—406	CCCSL101J50 (CCDSL101J50)
	C112	CCDSL101J50
	C141, C142	CCCSL121J50 (CCDSL121J50)
	C424	CEASR47M100
	C117, C118, C128, C121, C122, C130	CEAS010M50
	C119, C120, C411, C413, C416, C426, C428	CEAS100M50
	C135, C136	CEASR15M50
	C412, C434	CEAS101M50
	C102, C107, C111, C115, C125, C126, C131, C132, C137, C138, C401, C402	CEAS2R2M50
	C310, C317	CEAS220M16
	C407—C410, C423, C425	CEAS221M25
⚠	C427	CEAS332M25
	C106, C108, C109, C116, C129, C415, C417, C420, C421	CEAS470M25
	C414, C429	CEAS470M50
	C422	CEAS471M6
	C440,C449	CKDYF473Z50
	C139, C140	CKCYB681K50 (CKDYB681K50)

Mark	Symbol & Description	Part No.
	C123, C124	CKCYB332K50 (CKDYB332K50)
	C443, C444	CKDYB103K50
	C445, C446	CKDYB222K50
	C101, C110, C143-C152, C448,C447	CKDYB391K50
		CKDYB102K50
	C153, C154	CKDYB472K50
	C104, C113	CQMA242J50
	C418, C419, C441, C442	CQMA473K50
	C105, C114	CQMA822J50
	C133, C134	CQSA391J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R441, R442	RD1/2PMFL100J
	R432, R437, R438, R424, R425,	RD1/2PM□□□J
⚠	R419,R420,R448,R449	RD1/4PMFL100J
⚠	R415	RD1/4PMFL101J
⚠	R421, R422	RD1/4PMF151J
⚠	R413	RD1/4PMFL222J
	R403—R411, R414, R416—R418, R426—R430, R434	RD1/4PM□□□J
⚠	R412, R435	RFA1/4PL101J
⚠	R433	RFA1/4PL121J
⚠	R423	RS1LMF681J
⚠	R443	RS2LMF271J
⚠	R431, R436	RS2LMF4R7J
⚠	R444	RS2LMF221J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (OUTPUT) (2P)	AKB-093
	Terminal (INPUT, PHONO, CD, VIDEO) (6P)	AKB-095
	Terminal (SPEAKER)(4P)	AKE-109
	Mini jack (OUTPUT)	AKN-034
	Socket (TUNER)(6P)	AKP-083

EQ Assembly (For HEZ type only)

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	IC301, IC302 AUDIO IC	BA3812L

CAPACITORS

Mark	Symbol & Description	Part No.
	C330, C331	CCDSL101J50
	C313, C326	CEASR15M50
	C315, C328	CEASR68M50
	C308, C323	CEAS101M10
	C301, C302	CEAS4R7M50
	C309	CEAS470M25
	C305, C318	CKCYB182K50 (CKDYB182K50)
	C307, C322	CKCYB331K50 (CKDYB331K50)
	C303, C320	CKCYB391K50 (CKDYB391K50)
	C312, C325	CKCYB392K50 (CKDYB392K50)
	C304, C321	CKCYB682K50 (CKDYB682K50)
	C306, C319	CKCYX153M25 (CKDYX153M25)
	C314, C327	CKCYX183M25 (CKDYX183M25)
	C316, C329	CKCX393M25 (CKDX393M25)
	C311, C324	CKCYX683M25 (CKDYX683M25)

RESISTORS

NOTE: When ordering resistors, convert the resistance val into code form, and then rewrite the part no. as befo

Mark	Symbol & Description	Part No.
★★	VR301 Slide variable resistor	ACU1001
	Other resistors	RD1/8PM□□□J

MIC Assembly (For HEZ type only)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q202	2SA933S (JA101) (2SA1048)
★★	Q201	2SC1740S (2SC2603)

CAPACITORS

Mark	Symbol & Description	Part No.
	C202	CEASR47M50
	C206	CEAS101M25
	C204	CEAS100M50
	C205	CEAS470M25
	C203	CKCYB392K50 (CKDYB392K50)

Mark	Symbol & Description	Part No.
	C207, C208	CKCYF473Z50 (CKDYF473Z50)
	C209	CKDYB102K50
	C210	CKDYB472K50
	C211	CKDYF473Z50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	MIC jack (MIC)	AKN-052
	Mini jack (PHONES)	AKN1001